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Development of Combat Power

--An Offensive Fundamental

Lieutenant Colonel Henry V. Middleworth, *Infantry*
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IN MODERN warfare, as in most of history's wars, the principle of mass still applies. In fact, of the nine recognized principles of war, the principle of mass probably exerts the greatest influence on our offensive doctrine. The field manuals explain that mass, or the *concentration of superior forces*, creates the conditions essential to victory. Mass is normally associated with its corollary principle—economy of force. Therefore, in most situations, maximum mass may be effected at selected points by economically employing minimum forces on other portions of a front. With appropriate mass thus assembled, the offensive is initiated.

Too often, the words "concentration of superior forces" carry a connotation of numerical superiority. Recent military doctrine inferred that the attacking force must have a numerical superiority of more than 3 to 1 if it were to expect success. Although such numerical superiority is usually desirable, there will be many situations where its attainment will not be possible even though the principles of mass and economy of force have been correctly applied.

For example, in the Korean operation, United Nations forces have been engaging hostile forces which have been numerically superior since the conflict's outset. The Germans conducted successful offensives

against the Soviets in World War II with a numerical inferiority of 1 to 5. Obviously then, the words "concentration of superior forces" should not be associated with numerical superiority alone; rather, they must be construed to include all means for developing combat power to supplement available forces. The situation which follows will serve as a vehicle for illustrating how a commander may develop combat power and attack numerically superior forces. Conclusions drawn may indicate the necessity for including the development of combat power as a fundamental of the offense.

General Situation

Blue and Red are at war. The Blue 13th Army Group, with the First, Second, and Third Armies, advanced east and northeast with the objective of seizing Cheer. On 20 January, strong Red counterattacks halted the Blue advance along the general line Dreft—Duz—Ivory (see Figure 1). Blue has air superiority.

By 8 February, the Red attacks had subsided. The Blue 13th Army Group was concentrating forces in the vicinity of Dreft to continue the attack. The Blue Second Army will make the main effort; the Blue First and Third Armies will launch simultaneous attacks on a broad front in their respective zones to deceive

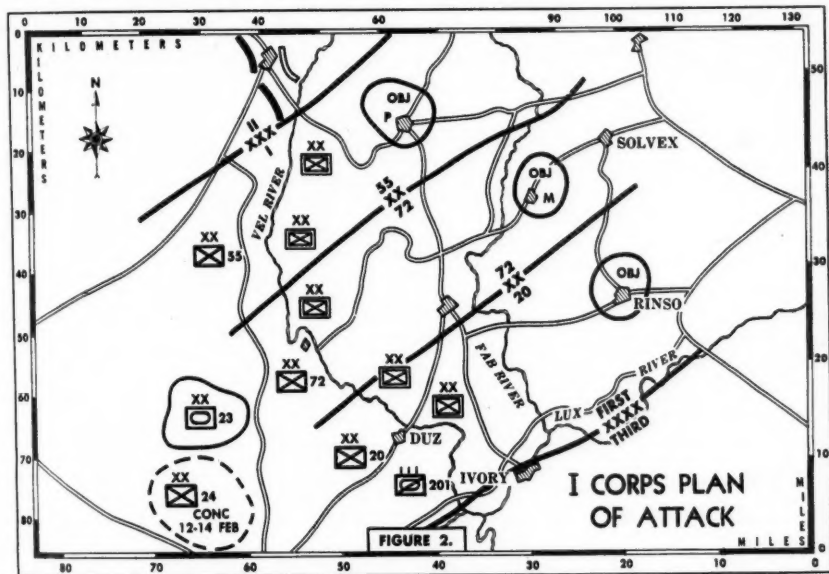
The principle of mass is supplemented not only by maneuvering superior forces, but by recognizing and exploiting the greater relative combat power which is discovered by a thorough analysis of the situation

plan of attack pertinent to the 20th Infantry Division are:

- a. The Blue First Tactical Air Force furnishes air support for First Army.
- b. The main effort of the Blue Third Army is to be in a zone about 20 miles south of the Lux River.
- c. The attachments to the 20th Infantry

The 602d Field Artillery Group [with 682d Armored Field Artillery Battalion (105-mm howitzer) attached]: general support of the 20th Division artillery; reinforce fires of the 20th Division artillery with two medium battalions.

The 603d Field Artillery Group: general support of the 55th Division artillery;



Division include the 751st Tank Battalion (90-mm); 201st Armored Cavalry Regiment (effective 9 February); 325th Chemical Mortar Battalion; and the 346th Chemical Smoke Generator Company.

d. The 20th Infantry Division, upon seizing Rinso, is to be prepared to continue the attack toward the northeast. Its mission also includes protecting the south flank of the Blue I Corps and the First Army.

e. The corps artillery plan includes:

The 601st Field Artillery Group: general support of the 72d Division artillery; reinforce fires of the 72d Division artillery with two medium battalions.

reinforce fires of the 55th Division artillery with two medium battalions.

The 604th Field Artillery Group: general support; prepared to mass fires in the zone of the 20th and 72d Divisions.

(Each artillery group has two medium and one heavy artillery battalions except the 604th Field Artillery Group which has three heavy artillery battalions.)

f. The 508th Engineer Combat Group supports the 20th Infantry Division.

4. A conference is scheduled at corps headquarters early 9 February, when the corps plan will be discussed and additional details will be confirmed.

The Analysis Begins

With this information, the Commanding General, 20th Infantry Division, immediately began his analysis of the task which confronted him. The Red and Blue situation was posted on his situation map (see Figure 3). The G2 immediately brought his intelligence estimate up to date in order that the commander might include pertinent portions in his estimate of the situation. Important extracts from the intelligence estimate are as follows:

Weather

The forecast for the period 9-16 February indicates generally clear weather. During the latter part of the period there is a possibility of light rain or snow. Visibility will be generally limited, winds of 6 to 12 miles an hour will be from the southwest. Temperatures will range from a high of about 45 degrees Fahrenheit to a low of about 28 degrees Fahrenheit. Some light snow can be expected on the ground during the early part of the period, but this should not affect cross-country movement to any great degree.

Obstacles

The Vel River is unfordable south of Duz. The river is not over 60 feet wide at any point, with a flow of 8 to 10 miles an hour. Its steep banks rise abruptly in several places to 400 feet above the river, particularly north of Duz.

The Ajax and Old Rivers extending north from "A" are fordable, but difficult to cross without preparation. The banks are very steep on the western sides. The Fab River is unfordable south of Babo. The banks of its gorge rise to an abrupt height of 600 feet above river bed in most places. The Lux River is a wide, unfordable river obstacle.

Enemy Situation

The 20th Infantry Division is opposed by from 13 to 16 infantry battalions, 10 artillery battalions, 6 mortar companies,

2 antiaircraft artillery battalions, 2 medium tank battalions, and 2 reconnaissance companies. The morale of the enemy troops is generally good. Red units are estimated at 80 percent strength in personnel and equipment; their combat efficiency is good. The Red 23d Infantry Regiment is a newly arrived unit which has not been in prior combat action. The G2, First Army, estimates that Red can be expected to attack within the army area with as many as 100 fighter sorties and 50 bomber sorties daily.

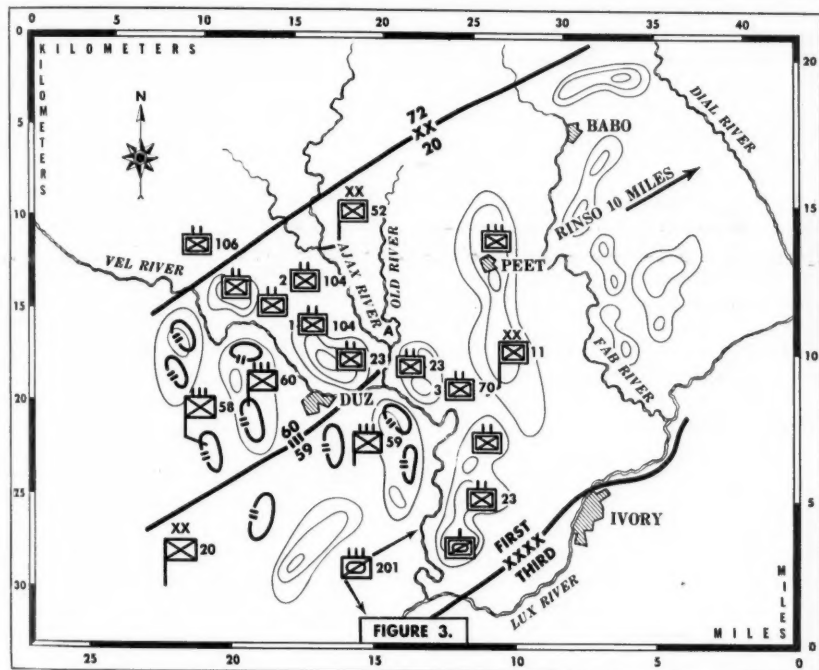
Units consist of the 23d, 37th, and 70th Infantry Regiments; 130th and 131st Artillery Battalions; 104th Mortar Battalion; 32d Antiaircraft Artillery Battalion; and 111th Reconnaissance Company; all are a part of, or attached to, the Red 11th Infantry Division. Elements of the Red 52d Infantry Division include the 104th and 106th Infantry Regiments, the 101st and 171st Artillery Battalions, the 144th Antiaircraft Artillery Battalion, and the 152d Mortar Battalion. The tank battalions organic to each of the identified Red divisions have not been located or identified in our zone; however, it must be presumed that they are available to the respective division commanders. These divisions are part of the Red XXII Corps.

After cessation of the multiple counterattacks against our forces, Red deployed defensively. He has shifted some of his infantry forces north to cover a wider sector and moved his artillery and mortar positions to the rear. The Red positions have been strengthened with earthworks, mines, trenches, and wire. A prisoner of war from the Red 23d Infantry Regiment states that his newly arrived unit is attached to the 11th Infantry Division and has been assigned a defensive mission. This regiment is a conscript unit which has not been received with confidence by volunteers in the 11th Infantry Division. The I Corps reports that the Red high command is seriously concerned over recent advances of the Blue Second Army on

the north. The Red 43d Armored Division, formerly opposite the I Corps sector, has moved north. The Red units now in contact have been ordered to hold their present positions until general reserve

priority makes the Red resupply particularly difficult.

A Red infantry regiment is located in the vicinity of Peet. Blue tactical air reports that a large Red force believed



reinforcements can be moved into the area west of the Tide River.

The Red XXII Corps is reported to lack adequate supplies to support large-scale offensive operations at this time. Transportation for resupply is limited; priority for use has been assigned to the Red Tenth Army in the north opposite the Blue Second Army. Artillery and mortar ammunition resupply is critically limited because of the recent loss of large stocks resulting from Blue air strikes. Shortages exist in all classes of supply for Red front-line divisions. Defense materials and supplies are inadequate. Blue air supe-

riority makes the Red resupply particularly difficult. Red general reserve forces are located east of the Tide River.

Areas of Combat Superiority

The Commanding General, 20th Infantry Division, must examine the situation confronting his division carefully. Initially, it appears that the 20th Infantry Division has been assigned a difficult task. An attack must be launched against two hostile divisions that are disposed on terrain which is ideal for defense. However, a careful examination of the facts in the

situation will reveal certain areas where combat superiority over the Red forces may be developed. These aspects of the situation, when properly evaluated, will offset Red's numerical superiority and give the commanding general a basis for his attack plan. The plan of attack will be designed to exploit these areas of possible combat superiority and as a corollary to increase the combat power of the 20th Infantry Division.

It is suggested that the reader pause a moment and review briefly the situation in the zone of the 20th Infantry Division. All of the necessary information to solve the problem of how to develop combat superiority has been presented. Like the Commanding General, 20th Infantry Division, attempt to discern those aspects of the situation which contribute to the division's combat power. Your list may be compared with the discussion which follows.—The Editor.

Opposing Forces

Although the elements of two Red divisions oppose the Blue 20th Infantry Division, Red numerical superiority is restricted primarily to infantry forces. Other combat means of Red and Blue are equal or the balance favors the 20th Infantry Division. Although Red probably has two tank battalions in the area, Blue intelligence has been unable to locate or identify them.

Red armor is, therefore, at a parity with that organic or attached to the 20th Infantry Division. Should Red's tank battalions be employed against the 20th Infantry Division, their maximum capabilities may not be felt because of possible fuel and ammunition shortages.

Red artillery is also deficient when compared with that available to the 20th Infantry Division. The organic and the I Corps artillery total a greater number of pieces and will be more effective when the greater amounts of accessible ammunition are considered.

Blue air superiority will contribute to the effective employment of other means to attain combat superiority. With the assurance of close air support by the First Tactical Air Force, the 20th Infantry Division has additional fire support and great flexibility.

Blue's apparently stronger combat engineer support will also contribute to the attainment of combat superiority. Engineers will principally facilitate the employment of other combat means and impede the employment of Red's combat means. For example, combat engineers will initially assist infantry, artillery, and armor in crossing the Vel River. (Although mentioned here, it is not intended that engineers be utilized in an infantry role in order to develop combat superiority.)

Thus, in the general area of opposing forces, it becomes evident that Red's numerical superiority in infantry can be partially offset by other combat means available to the 20th Infantry Division.

In considering opposing forces, the Commanding General, 20th Infantry Division, must also include the over-all superiority in service and logistical means organic to his division. In addition to knowing the division's capabilities and limitations for service and logistical support, the commander also knows that Red logistical units are inferior to his, particularly as regards transportation. Therefore, as an area for consideration, opposing forces should include a comparison of not only combat means, but also logistical and service means.

Enemy Situation

A second area where combat superiority may be developed may be called the enemy situation. Perhaps the conditions existing within Red's own position expose specific weaknesses which may be exploited. In the zone of advance, Red has two division commands, the 11th and 52d

Infantry Divisions. The fact that these two commands exist provides the possibility of delayed reaction by one against an attack in the sector of the other. The wide front on which the Red divisions are disposed with numerous forces committed in a modified linear defense should further restrict Red's flexibility in the conduct of his defense.

The Red 23d Infantry Regiment is a newly arrived conscript unit. There are indications that the regiment's presence is resented by other Red forces. Aside from the possibility of resulting low morale in the 23d Infantry Regiment, it will be receiving its first battle experience under unfavorable conditions.

It has already been mentioned that Red has a shortage of transportation. Other logistical deficiencies such as limited defense materials and mortar and artillery supply difficulties may tend to reduce the efficiency of Red units. These onerous conditions which confront the enemy may affect adversely Red morale and combat efficiency. Although the morale and combat efficiency of the enemy has been good to date, reasonable conjecture well may include anticipated deterioration of these important military qualities.

Terrain

The terrain can often be used to advantage either to develop further the combat power of the attacker or to reduce the effectiveness of the defender. In this situation, the Red main battle position is in rear of an excellent obstacle, the Vel River. Naturally, the combat power of the 20th Infantry Division will be restricted until crossing sites have been secured and bridges constructed. However, the depth of the Red main battle position is severed by the Ajax and Old Rivers; this compartmentation of the Red sector will make lateral movement of defensive forces very difficult and consequently favors the 20th Infantry Division.

Additional Combat Power

Thus, the Commanding General, 20th Infantry Division, adjudges the situation confronting his division and ascertains those areas where combat superiority may be developed. In this situation, the areas he considered were opposing forces, enemy situation, and terrain. Many times, slight modifications in the corps plan will benefit an attacking division. The division commander is obliged to recommend these modifications to the corps commander if they seem advantageous to the division and yet do not involve a radical departure from the corps commander's concept.

In this situation, two such modifications of the corps plan will provide the 20th Infantry Division with additional combat power. First, the Commanding General, 20th Infantry Division, can recommend that the 682d Armored Field Artillery Battalion be attached to the 20th Division rather than the 602d Field Artillery Group. This 105-mm battalion can better be used to furnish direct support to the division rather than to reinforce the division organic artillery because of the inherent characteristics of its weapons. For example, additional light artillery can be employed to furnish direct support for the 201st Armored Cavalry Regiment which is being attached to the division on 9 February.

A second modification to increase the combat power of the 20th Infantry Division that can be recommended is to echelon the time of attacks of the 20th, 72d, and 55th Infantry Divisions (see Figure 2). By echeloning the time of attacks along the corps front, the supporting air and artillery can be concentrated on successive division fronts. The concentrated employment of additional fire support will increase the combat superiority of the 20th Infantry Division for its initial attack; whereas, for a simultaneous corps attack, the 20th Infantry Division must share the available air support and the

available general support corps artillery (604th Field Artillery Group) with the 72d Infantry Division.

Summary

Initially, the prospect of attacking two Red divisions with the Blue 20th Infantry Division was unattractive at best. However, by studying all aspects of the situation, it became evident that Red's preponderance was limited to infantry forces alone. By comparing other means available to each adversary—both combat and service support—the 20th Infantry Division proved to have equal or greater combat power.

The Red situation, which included composition, dispositions, significant activities, and status of supplies, had many weaknesses which reduced Red's potential combat efficiency and conversely contributed to the 20th Infantry Division's relative combat power. Even the formidable terrain controlled by Red had certain defects which could be exploited by the 20th Infantry Division to good advantage.

By recommending constructive modifications of the initial concept of the operation to the corps commander, the Commanding General, 20th Infantry Division, has made sure that his division will be afforded maximum combat power for its attack. Now the division commander and his staff can proceed with the detailed planning for the coming attack with a reasonable assurance of success. Naturally, subsequent plans will exploit to full advantage all of these considerations in order that the 20th Infantry Division's superior combat power will be employed most decisively.

Conclusions

Several conclusions may be drawn from the specific situation portrayed:

1. Relative combat power of opposing

forces is not directly proportionate to their relative numerical strengths.

2. When hostile forces are numerically superior, the commander examines all aspects of the situation to determine those areas in which greater combat power over the enemy may be developed.

3. Greater relative combat power constitutes the necessary mass for successful offensive operations.

The situation presented is not an unusual one; an attack against numerically superior forces may be the rule rather than the exception in a future world conflict.

For example, in World War II the United States was said to be scraping the bottom of the barrel as far as personnel was concerned. Today, the supply of personnel remains critical. To offset anticipated future manpower shortages, modern weapons developed since World War II have been designed primarily to replace manpower with mechanical power. The most effective techniques for employing available manpower and these modern weapons must be developed and exploited. Therefore, the foregoing conclusions relative to the development of superior combat power in a specific situation must be applied with equal force to any situation.

The principle of mass so vital to producing those conditions essential to victory is supplemented not only by maneuvering superior numerical forces (perhaps applying the principle of economy of force), but also by recognizing and exploiting the greater relative combat power that is discovered by a thorough analysis of the situation. Therefore, the development of greater combat power can be considered a fundamental of offense; one which will materially contribute to the success of any offensive maneuver.

More Effective Oversea Supply

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

AN ARTICLE appearing in this publication a few months ago discussed the Army's plan for improving its supply system by "strengthening stock control procedures in overseas commands and by shortening the supply distribution cycle."* The United States Army, Pacific (USARPAC), with headquarters in Hawaii, has been actively engaged for the past 2 years in furthering the first of these two objectives—"strengthening stock control procedures"—and has recently, with the co-operation of the Oversea Supply Division (OSD) at the San Francisco Port of Embarkation, inaugurated a pilot test on "automatic machine requisitioning" on OSD in the interest of reducing both requisition preparation and review time at USARPAC depots and its machine records unit (MRU), as well as the editing and processing time in OSD. To date, experience on both projects has been extremely gratifying, and evidences a real potential for continuing improvement in both areas.

* "The Supply Distribution Cycle" by Lieutenant Colonel James G. Coats, *MILITARY REVIEW*, April 1952.—The Editor.

The island of Oahu, which is considered but a single post, has five scattered "technical service supply activities," so-called because, although they were initially established as depots, they have since the war, and particularly under the dynamic and practical approach of Lieutenant General Henry S. Aurand, assumed the more appropriate and effective roles of station supply agencies, with only limited depot functions, servicing using agencies directly with a resulting elimination of intermediate supply functions and personnel.

In keeping with the "one post concept," the machine records unit of the quartermaster supply activity was combined with the adjutant general's MRU in 1950 and was assigned the mission of performing electrical accounting machine (EAM) stock accounting for all technical service supply activities in the command which included, in addition to quartermaster, the engineer, medical, ordnance, and signal. (EAM accounting for Chemical and Transportation Corps units on Oahu was determined to be impractical because of their insignificant volume of supply transactions.)

The accounts of the five major activities were placed on EAM in accordance with their respective technical service prescribed procedures by May 1951. At that time, both the quartermaster and medical sections were submitting mechan-

The Pacific Command is improving its supply system through the adoption of standard electrical accounting machine procedures and by testing new requisitioning methods to reduce the distribution cycle

ically prepared requisitions on OSD by the method discussed in the reference article and which is that commonly used by most Zone of Interior and oversea depots.

Local SOP Developed

Before further progress was made in the mechanization of the requisitioning process, however, the Commanding General, USARPAC, determined that an effort should be made to standardize supply accounting procedures in the five supply activities. A working committee comprising representatives of G4, MRU, and each of the supply activities, and monitored by a personal representative of the commanding general, formulated a basic standing operating procedure (SOP) for the maintenance of stock record accounts by EAM methods.

One of the key features of the SOP was the incorporation of a modified version of the service stock system for the requisition and issue of expendable supplies. This system is based on the provision that the technical service supply activities establish and maintain levels for recurring items of expendable supplies at their dependent, using agencies. Such levels are established and based upon past issue experience, adjusted to future planned work loads, and published on pre-cut issue slips which list the items of recurring usage with predetermined quantities for the total authorized allowance and for the reorder point. At the replenishment time, the using agency need only circle the line item numbers of those items of which its stocks have reached the reorder point. The using agency is then issued the total authorized allowance quantity. The reorder point quantity is set at that amount estimated as required for operations pending receipt of routine replenishment deliveries. Hence, the using agency stock would normally reach exhaustion by that time and would require replenishment of the total quantity of the authorized allowance. (See Figure 1.)

This system, predicated as it is upon intelligent predetermination of requirements which are requisitioned on uniform pre-cut issue slips, resulted in a considerable economy in time and manpower in USARPAC by elimination of:

1. Periodic and repeated preparation of new requisitions (for the same items in approximately the same amounts).
2. Basic errors resulting from inaccurate paper work of inexperienced personnel.
3. Virtually all special and emergency requisitions as a result of increased attention to requirements and levels.
4. Assembling, transporting, and accounting for odd and insignificant amounts by issuing items in standard unit pack quantities whenever possible.
5. All subsequent editing for authorization and accuracy of computations in stock control.

Local command implementation of these procedures was completed by the end of 1951. (The logic and effectiveness of this system for local supply operations presented strong precedent for the feasibility and desirability of a parallel method, on a greater scale, for port-to-theater supply requisitioning and replenishment, as discussed later in this article.)

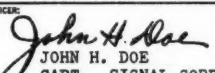
Army Board Proposal

In December 1951, the Army Planning and Development Board advanced its initial proposal of the card editing system for supply accounting, employing the mark-sense* principle of coding control and transaction cards in depot stock control units. This innovation purported to eliminate the bottleneck operation of key punching in MRUs and to permit the substitution of a tub file of EAM balance cards for the old, voluminous, and costly availability listing.

These features, after being modified to

* Method of posting EAM-maintained stock records with electrographic pencil which activates the electrical accounting machine.

| ISSUE SLIP | | | | | | | | | | PAGE 1 OF 1 PAGE | |
|------------|---|--------------|--------------|--------------------|--|--------------------|-----------|------------------------------|--------|------------------|--|
| FROM | BASE OR STATION ACCOUNTABLE OFFICER HAWAIIAN SIGNAL DEPOT APO 958 | | | | ISSUE SLIP NO. 09004-6-52 | | | PROPERTY SIGNAL | | | |
| | ORGANIZATION OR UNIT MAINTENANCE BRANCH, DEP OPNS DIV 8309TH ARMY UNIT, APO 958 | | | | TYPE OF ISSUE INITIAL REPLACE- MENT MEMO REC'D X | | | PROPERTY CLASS EXPENDABLE | | | |
| TO | | | | | ACCOUNT SYMBOL 09004 | | | WORK ORDER NO. | | | |
| | | | | | | | | | | | |
| ITEM NO. | STOCK OR PART NO. | NOMENCLATURE | AUTH. ALLOW. | ON HAND AND DUE IN | UNIT | QUANTITY REQUESTED | UNIT COST | TOTAL COST | ACTION | | |
| 1. | 3A30 | BATTERY | 30 | 15 | EA | 30 | | | | | |
| 2. | 3A31 | BATTERY | 8 | 4 | EA | 8 | | | | | |
| 3. | 3A275-200 | BATTERY | 2 | 1 | EA | 2 | | | | | |
| 4. | 3B1500-5 | ELECTROLYTE | 4 | 2 | EA | 4 | | | | | |
| 5. | 4A2701.2 | TAPE | 6 | 3 | EA | 6 | | | | | |
| 6. | 6G199.1 | CEMENT | 4 | 2 | EA | 4 | | | | | |
| 7. | 6G246 | COMPOUND | 6 | 3 | EA | 6 | | | | | |
| 8. | 6G650 | GREASE | 12 | 6 | EA | 12 | | | | | |
| 9. | 6G1516 | POLISH | 8 | 4 | CN | 8 | | | | | |

| THIRTY (30) DAY REQUIREMENTS OF EXPENDABLE SUPPLIES AS AUTHORIZED. | |
|--|--|
| AUTHORITY ISSUANCE OF QUANTITY IN "QUANTITY REQUESTED" COLUMN IS AUTHORIZED. ITEMS MARKED "DUE OUT" WILL BE ORDERED AND WHEN RECEIVED ORGANIZATION WILL BE NOTIFIED. (DATE) _____ (FOR THE BASE OR STATION ACCOUNTABLE OFFICER) QUANTITIES SHOWN IN "ACTION" COLUMN HAVE BEEN ISSUED: (DATE) _____ (OFFICER'S USE) | FOR THE COMMANDING OFFICER:  JOHN H. DOE CAPT., SIGNAL CORPS 10 MAR 1952 (DATE) _____ (COMMANDER SUPPLY OFFICER) QUANTITIES SHOWN IN "ACTION" COLUMN HAVE BEEN RECEIVED: (DATE) _____ (AUTHORIZED REPRESENTATIVE) VOUCHER NO. _____ |

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EXAMPLE OF PRE-CUT ISSUE SLIP AS USED IN USARPAC FOR THE REQUISITIONING OF EXPENDABLES.

1. WHEN STOCKS ON HAND REACH PREDETERMINED REORDER POINT QUANTITY, LINE ITEM NUMBER IS CIRCLED.
2. SUPPLY ACTIVITY ISSUES PREDETERMINED "QUANTITY REQUESTED."
3. ROUTINE DELIVERY IS SCHEDULED TO REACH THE REQUISITIONER BEFORE THE TIME HIS STOCK ON HAND REACHES EXHAUSTION.

FIGURE 1

accommodate USARPAC's simplified station-supply type operation, were incorporated into the command's supply accounting SOP.

The mark-sense system along with the balance card deck has enabled USARPAC's limited machine capacity to summarize and furnish stock control units with more frequent and timely stock balances than has ever heretofore been possible. These are now accomplished on a weekly basis—as compared with the former monthly production of the old availability listing—and at a fraction of the manpower and machine time. It was this weekly summarization of new stock balances which led almost fortuitously into the next novel but logical step in this program of supply procedure improvement.

At this weekly cut-off, the production of a new balance card provides the opportunity for the determination, by one additional mechanical calculation, of the net stock position. Thus the command is afforded four opportunities each month to identify those items on which the net stock position has fallen to or below the established reorder point. This operation can gain up to 29 days in the time saved through identification of requisitionable items alone. To capitalize on this potential improvement in time economy, a detailed proposal exploiting this feature was made to OSD in February 1952.

'Automatic' Requisitioning

The precept upon which this proposal to OSD was based revolves around the same principles so advantageously employed in the local requisition and issue practices under the modified service stock system. Here again the primary feature is the essentiality of predetermining and constantly reviewing theater requirements and levels as a forerunner to intelligent requisitioning. Under the present system of EAM requisitioning, a listing of items, for which stock balances have fallen below an established reorder

point, is run off by the MRU and then stock control units consume a leisurely week or so in an after-the-fact analysis of those particular requirements; eliminating inconsequential amounts, adding items not listed but considered (by the crystal ball method) possibly a potential source of future shortage, and, when balances are found to be alarmingly low or even nonexistent, submitting frantic emergency or special requisitions on the port.

The only attention which the theater is certain of applying to this vital matter of requirements and levels is that devoted to it in the brief review time between the MRU run-off of the preliminary requisition and the deadline for forwarding the final or edited copies to OSD. It is not surprising, therefore, that requisitions on OSD for such ridiculous quantities as 1 foot of copper wire or for amounts approximating the entire theater objective have not been infrequent. Such fiascos substantiate the conclusion that levels review and analysis are a constant requirement and are the keystone of any successful supply operation.

Elimination of Post Edit

On the other hand, once levels are intelligently established and an adequate "policing" procedure is effected, these levels should be as acceptable on a continuing basis to OSD's editing requirements as they are to a theater's needs, providing issue experience further validates them and subsequent changes are adequately justified. Granting this position, its implementation by the theater and OSD could expedite the requisition processing and thus reduce the supply distribution cycle.

Three Basic Questions

It was USARPAC's contention that the editing function and responsibility which consumes the major share of the processing time in OSD need verify only three basic questions:

1. How much is the requisitioner authorized?
2. How much does he have on hand and on order now?
3. How much should be supplied on this requisition?

Three Answers

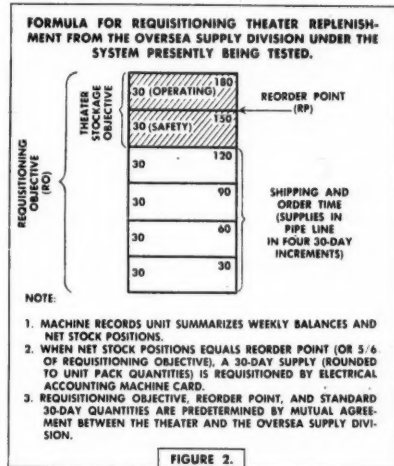
Now, if analysis and determination of requirements in advance of demand could establish levels and the basis for level changes, the answer to question "1" could be predetermined and accepted without editing delay, provided the approved and established requisitioning objective is a matter of record at OSD and any variance therefrom is separately and adequately justified.

Next, with the maximum level or requisition objective predetermined and accepted by OSD, the quantity to be furnished as a 30-day supply (rounded out to quantities economical to handling and shipment on the basis of unit pack) could likewise be predetermined and recorded at the port as well as in the theater. Thus, question "3" would be answered, obviating the need for OSD's verification of the theater's arithmetic as is required under the present system.

Finally, with questions "1" and "3" satisfied, and predetermined to avoid edit delays after receipt of requisitions, question "2" could be answered by the theater by furnishing OSD with the quantity of the net stock position of the requisitioned item in lieu of the present manual data: "on hand, plus dues in, minus dues out." Inasmuch as the port has heretofore had no basis for verification of the two factors of the formula—on hand and dues out—the third factor, dues in, is inconclusive because of the time lag differential between requisitioner and supply point, the value of these factors for edit has always been questionable.

Furthermore, the duplicate operation of recomputing the net stock position by

use of these factors, for which the port must depend on the requisitioner's submission and integrity, is obviously unnecessary inasmuch as two sets of electric accounting machines (one in the theater and one at the port) starting with the identical factors must inevitably pro-



duce identical answers. In offering the net stock position, the theater is thereby justifying the requisitionable status of the item, and the accuracy and veracity of its computation can be checked by routine inspection by responsible agencies at any time.

The concept thus formulated required only a means of expeditious implementation to complete the case for OSD's consideration. As previously mentioned, the new weekly summarization of balances under the card editing system presented a tailor-made solution, which dovetailed into the operation as though specifically designed for the purpose.

USARPAC-OSD Agree on Procedure

At this point, USARPAC invited OSD to send liaison personnel to Hawaii to assist in the formulation of detailed plans

for the conduct of a test for the processing of requisitions based on this concept, and particularly to analyze and approve the current basis or to establish mutually agreeable levels for the command on those items to be so requisitioned.

Basic Points of Agreement

The following basic agreements were reached:

1. MRUs of USARPAC and OSD will be provided a master deck of cards for items to be requisitioned (initially, 5,000 Signal Corps expendables on the test basis). These cards will show basic information to include stock number, unit of measure, nomenclature, reorder point, and 30-day level to nearest unit pack (which is uniformly the amount requisitioned).

2. A requisition card will be prepared in USARPAC for each item showing stock balance at or below the reorder point at time of weekly cut-off. (See Figure 2.) This card will show the necessary information, to include stock number, nomenclature, and, for justification purposes, the net stock position.

3. These cards will be transmitted to OSD by overnight air mail. (Other means by which requisition information could be transmitted, depending on proximity to port and other contingencies, are radio, telecon, and telegraph tape.)

4. OSD will then machine match these cards against their duplicate master deck to verify agreement on all factors and will select item cards involved for the preparation of requisitions for the predetermined quantities.

As stated, the predetermination of the theater objectives and reorder points of all items by mutual negotiation between OSD and USARPAC should constitute, in effect, a pre-edit, and thus eliminate the need for submission of detailed justifications, and the previous review of requisitions locally; as well as the subsequent

manual edit for authorization, and the duplicating recomputation of net stock position and other factors on the part of OSD.

The editing function of OSD is substantially satisfied in the process of establishing justifiable levels in the theater initially. Thereafter, an occasional spot check to verify that they and the theater are operating on identical information factors, and that subsequent changes are being justified to OSD's satisfaction, should adequately fulfill this requirement.

Furthermore, the preliminary adjustment of all levels, particularly the amount to be requisitioned, to standard unit packs wherever appropriate, obviates this as a continuing requirement, and eliminates the record keeping involved in accounting for odd residual amounts which frequently result from requisitions computed under the old system. Unit pack requisitions should also greatly simplify, and thus expedite, the handling and shipping operation.

Distribution Cycle Reduced

It is estimated (assuming approximately 2 days in USARPAC for preparation of the requisition cards, 2 days en route to the port, and not to exceed 5 days at the port for processing of the requisition) a minimum of 20 days will be eliminated from the present 30-day over-all supply distribution cycle which accomplishes the same steps.

This estimate is conservative and does not include potential time savings resulting from the handling and shipping of unit packs, and the average savings of 10 to 15 days in the time lag between stock depletion and the release of a replenishment requisition as compared with the old system. Moreover, the incidental but substantial reduction of special and emergency requisitions that should result from more frequent surveillance of theater requirements alone should prove another potent

factor.
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factor in the effort to reduce the cycle.

Further refinements in this operation can and should be expected as experience is gained and as more effective performance by the theater in carrying out its functions in the procedure instills greater confidence in the system on the part of the oversea and Zone of Interior depots.

Final Proposal

One further concept for more effective supply to oversea theaters remains to be proposed for Army consideration. This concept is based on the premise that theater stocks on hand should be sufficient to meet anticipated demand *through the time required to accomplish replenishment*.

For example, USARPAC is presently authorized only a 60-day allowance for stocks on hand, made up of a 30-day safety level and a 30-day operating level. The current shipping and order time of 120 days is added to establish the requisitioning objective at 180 days of supply, with replenishment to be requisitioned in 30-day increments.

The two basic faults in this formula for oversea support are:

1. Items of accelerating demand can reach exhaustion and warehouse refusal before detection and emergency replenishment action can operate.

2. It results in repetitive requisitioning of inconsequential quantities which is uneconomical for packing, stowage, and shipping.

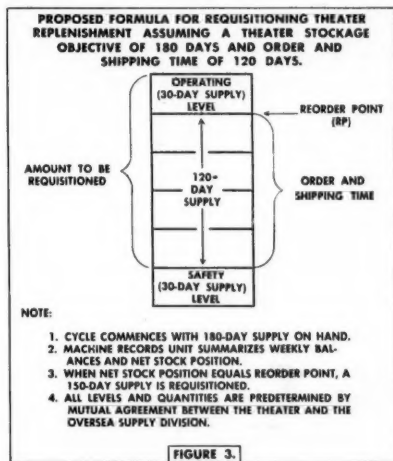
USARPAC's Concept

The USARPAC concept (see Figure 3) proposes to revise the supply support formula by establishing the theater *stockage* objective as the quantity now representing the theater *requisitioning* objective; that is, 180 days of supply. The same quantities of stocks are involved, but their deployment would be altered. In place of having four 30-day shipments on any one item involving small quantities on a mail-order and parcel post cost basis always en route

in the pipe line (with all the incidental repetitive requisition and due-in accounting paper work), only one shipment of each item need be ordered on one-fifth the present frequency.

An Example

The formula would work like this: The theater would establish its reorder point at the safety level plus the quantity representing the shipping and order time (currently 150 days of supply for USARPAC) and would requisition at that time the

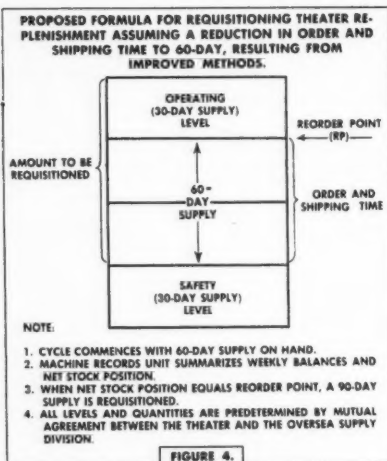


quantity necessary to replenish the operating level, plus the quantity representing the shipping and order time. It is not essential that the supply point ship the entire quantity as one immediate action. It has merely been given the estimated need of the requisitioner for 4 months ahead and can exercise its own planning judgment as to quantities and scheduling for shipment.

Foreseeable Advantages

The value to the supply point in having a firm demand figure of 4 months in advance for oversea requirements is obvious. Both procurement and cargo space planning are enhanced. The value to the over-

sea theater in having sufficient stocks on hand to protect against fast-moving items is equally apparent. Accelerating demands thus will be detected in time to take whatever action the nature of the item requires and disastrous shortages prevented. Similarly, slower moving items can be more readily detected and withheld from replen-



ishment for further study and adjustment of levels.

Present System's Disadvantages

At best, the current formula for supply support to oversea commands provides only a hand-to-mouth existence, based as it is upon unstable factors, estimates, and forecasts. It is predicated upon the assumption that the rate of issue demand established for a 30-day operating cycle constitutes a dependable average. Since this is seldom the situation in an oversea theater, frequent instances of stock exhaustion and warehouse refusals are continuously developing to plague the oversea commander and cause him to look askance at the logisticians.

With a maximum of only 30 days' operating stock authorized, the existing formula contemplates the complete exhaus-

tion of the operating allowance each 30-day period. The slightest interruption to transportation or variance in rate of consumption forces the theater to dip into its 30-day safety level. Although it is presupposed that each month another 30-day increment will be received in replenishment, such support is not automatic and depends entirely upon requisitions having been processed each 30-day cycle for this average 30-day amount. The variations in demand, mentioned as inherent to oversea conditions, may often disturb this orderly planned cycle replenishment, with resultant stock exhaustion for protracted periods.

Other Considerations

The example given for the 120-day shipping and order time situation involves a possibility of theater stockage up to 180 days of supply but this extreme is not contemplated in the actual operation of the plan. Improved electric accounting machine methods now being introduced, together with other Zone of Interior studies, promise early improvement to 90 days and some assurance that 60-day shipping and order time can soon be expected. Assuming a 60-day distribution cycle, a formula (as shown in Figure 4) would reorder 90 days of supply when stocks reach a reorder point of 90 days on hand. This would provide the theater with an adequate supply of stocks without excessive storage problems; would eliminate two-thirds of the present requisitioning frequency and paper work volume; and would combine the advantages of bulk shipment planning and smaller over-all pipe-line quantities. Furthermore, the proposed formula, being more currently responsive to the conditions at the using location, would thereby tend to eliminate excesses as well as shortages.

Non-Expendable Items

Finally, it is recognized that non-expendables, and particularly the develop-

ment-type controlled items, will require more detailed justification to support replenishment demand, and will necessarily be handled individually and on a less "automatic" basis than are expendables under either system presented. However, it is contended that *delivery* of these items can be greatly expedited by the foregoing methods of processing the theater's requirements through the replenishment channels. In the meantime, the advantages realized in processing of expendables alone (which average 80 percent of a theater's transaction volume), by the "automatic" method, certainly warrant its continued experimentation and development.

Summary

USARPAC has actively pursued the Army's objectives of improving its overall supply system; locally, by developing standard EAM accounting procedures for all technical service supply agencies in the command, and in its relationship with the Zone of Interior by proposing and testing a new method of replenishment requisitioning which possesses great potential for shortening the supply distribution cycle which presently consumes approximately 120 days.

USARPAC's program for reducing the supply cycle has three phases—all inter-related and predicated upon the principle of predetermined levels and requirements to be established by mutual agreement between supplier and supplied. The phases of this program are:

1. Locally, USARPAC's SOP for supply accounting which includes the use of:

- a. The pre-cut issue slip for requisitioning purposes, showing predetermined levels and reorder points for all expendable items.

- b. The mark-sensing of EAM detail and control cards in stock control to process mechanically supply transactions into the stock account, and to identify more frequently those items which have fallen below the predetermined reorder points.

2. In its relations with OSD, USARPAC is testing with the port a system of automatic requisitioning, wherein items whose theater stock balances have fallen below predetermined (established in negotiation with OSD) reorder points are identified on a weekly basis by EAM, and standard predetermined quantities are requisitioned by submitting to OSD an EAM card for each item, showing net stock position and other essential information. OSD then processes these cards against its duplicate master deck to obtain basic data for requisition preparation and submission to Zone of Interior depots.

3. Finally, USARPAC advances the yet untested proposal of requisitioning, on the automatic basis described, not 30-day increments, but the entire predetermined theater objectives, with predetermined reorder points established approximately at the shipping and order time, in order to:

- a. Place actual supply assets in the theater to support it throughout the normal shipping and order time.

- b. Permit shipment by economical wholesale lots instead of the frequent insignificant quantities broken out and handled under the present 30-day supply system.

- c. Eliminate the extensive and detailed operation of accounting for the multitude of dues-in under the present system.

The optimum success of this last proposal is predicated upon possible substantial reductions in the supply distribution cycle.

The German Campaign Against Poland in 1939

Demonstration of the Application of the Principles of War

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THE object of this article is to define the principles of war and to demonstrate their application by studying a historical example. The application of the principles of war depends on sound judgment and common sense, which, in turn, are developed by study and practice in the application of acquired knowledge to concrete cases. A principle of war may be defined as a fundamental or basic military rule, which, if applied correctly and intelligently, invariably increases the probability of producing favorable, and sometimes decisive, results.

These principles can be learned in a short time, but an entire lifetime can be spent in the study of their application in war.

The incredibly rapid annihilation of the Polish forces, by the German Army in 1939, provides an excellent example of the correct application of the principles of war by a modern army. However, using this campaign as an example does not indicate approval of the German campaign against Poland. It is advisable to study the campaigns of other countries, especially those ruled by dictators, to see what methods potential enemies may use against our forces and also to be able to study their campaigns objectively and with profit.

In reading this article, keep in mind the size of the forces involved—armies

and army groups. The principles of war apply to units of any size. They are just as applicable to platoons as to armies or army groups. The principles of war encompass the entire science and art of war. Their application to the preparation for war and the direction of war is called *strategy*. Their application to specific battles and operations is called *tactics*.

General Situation

Most military men emerged from World War I with a belief in the impossibility of a future European war of maneuver. They thought that the theater was too limited and the defensive too strong to permit new wars to be other than tests of endurance. Most continental nations, accepting their soldiers' new doctrine and being satisfied with the Versailles boundaries, devoted their military energies to constructing defensive lines instead of developing new offensive weapons and tactics.

Only Germany failed to adopt these new beliefs, refusing to accept a doctrine that gave no possibility of regaining her lost provinces. She continued to cling to the teachings of Clausewitz, who wrote:

If the defensive is the stronger form of conducting war, but has a negative object, it follows of itself that we must only make use of it as long as our weakness compels us to do so, and we must give up that form as soon as we feel strong enough

to aim at a positive objective. . . . A war in which victories are merely used to ward off blows, and where there is no attempt to return the blow, would be . . . absurd. Let us not hear of generals who would conquer without bloodshed. If a bloody slaughter is a horrible sight, then that is ground for paying more respect to war, but not for making the sword we wear blunter and blunter by degrees . . . until someone steps in with a sword that is sharper and lops off the arm from our body.

Germany's Superiority

Basically, Germany's superiority was due less to development of the airplane and the tank than to the strategic doctrine which limited allied production. The other European countries might have outdistanced Germany had their plans contemplated offensive action. The European countries' plan of a "bloodless war" was shattered all too soon by the one nation which clung to the age-old principle of the attack. They realized too late that, through neglect of the possibility of maneuver, they had failed to keep pace in the production of the most vital war equipment. Through subscribing to a false doctrine, they had allowed their "sword" to become "blunter and blunter by degrees" until Germany stepped in with a sharper weapon.

Poland, with the fifth largest army in Europe, was the first nation to reel under the attack of the rejuvenated German war machine. Because of later German conquests, the world has largely forgotten this initial success. Yet, in one respect, the rapid annihilation of the Polish Army

At 010440 September 1939, the Germans launched their attack in the form of an all-out air offensive, without a declaration of war. It came as a complete surprise to the Poles; for they were thinking, comparatively speaking, in the leisurely terms of 1914—cavalry screens, contact patrols, the cautious feeling forward by both sides, and the gaining of time to complete mobilization. In short, they were dreaming of light cavalry advance guard actions, and were awakened by a heavy cavalry charge. Thus it came about that the Polish war brain was paralyzed within 48 hours after the beginning of hostilities.

Polish Plans

Polish plans for defense contemplated the formation of six groups, each being roughly the equivalent of a field army. The 30 infantry divisions, 10 cavalry brigades, and 1 mechanized brigade which were available at the outbreak of war were all assigned to the 6 groups. (See Sketch Map.) The Poles evidently planned to create their general reserve from divisions not yet mobilized. When the German Air Force disrupted the mobilization of these divisions, Poland had no general reserve. Only two cavalry brigades were left along the eastern frontier to observe the Russians.

German Plans

About 80 percent of Germany's full mobilized strength, including all motor-

The incredibly rapid annihilation of the Polish armed forces by the German Army in 1939 provides countless examples of the proper application of the established principles of war by a modern war machine

was Germany's most important victory. This campaign demonstrated to Germany, if not to the rest of the world, the correctness of her military doctrine. It furnished the proving ground for her organization and weapons.

ized and mechanized divisions and two air fleets, was concentrated on the Polish border before the attack. A holding force, centered upon the fortifications in the vicinity of Frankfurt, was to defend in place, while two strong



Germany's lightning conquest of the outmoded Polish war machine is attributed to her well-trained, well-balanced, and ably led forces, which applied correctly the principles of war. Above, a German tank unit moving toward Warsaw. Below, a German horse-drawn artillery unit advancing near Augustowe, Poland.—Department of Defense photos.



march on Warsaw. Only the Polish Northern group was able to inflict a check upon the German Third Army. However, it was soon outflanked and fell back to the Narw River where a fairly strong defensive system had been prepared in advance.



A German 20-mm gun on a self-propelled carriage lending support to the infantry.

The second week was marked by bitter fighting, and by its end, the Polish Army ceased to exist as an organized force. In the south, the German Fourteenth Army drove on to reach the San River. North of it, the four Polish divisions which had retreated to Radom were encircled and destroyed. The two armored divisions of the German Tenth Army reached the outskirts of Warsaw, but, having no infantry with them, could not make headway against the desperate resistance organized by the townspeople. Northeast of Warsaw, the Third Army encircled the capital from the east, and its left column reached Brest-Litovsk, a hundred miles from the battle front.

The Posen group (Polish) had been

joined by divisions from the Thorn and Lodz groups, forced toward them by the German onslaught. These now numbered 12 divisions. The German Tenth Army streamed toward Warsaw protected by the Eighth Army. Although already virtually surrounded, the Polish commander of the Posen group, General Kutrzeba, resolved to strike south against the flank of the main German force. This unexpected Polish counterattack created a crisis which drew in the German Eighth Army and part of the Tenth Army. The Tenth Army was delayed from gaining its Warsaw objective. A corps of the German Fourth Army from the north also was used to stop the Polish counterattack. Under the assault of all these powerful forces and overwhelmed by unresisted air bombardment, the Posen group maintained its struggle for 10 days. It was finally destroyed on 19 September.

In the meantime, the outer German pincers had met and closed. The Fourteenth Army reached the outskirts of Lemberg on 12 September and, striking north, joined on 17 September with the troops of the Third Army which had passed through Brest-Litovsk. There was now no loophole for escape. On 20 September, the Germans announced that the battle of the Vistula was "one of the greatest battles of extermination of all times." After many days of violent bombardment from the air and by heavy artillery, Warsaw fell on 27 September. Modlin, a fortress 20 miles down the Vistula, had taken in the remnants of the Thorn group and was able to fight until 28 September.

The Russian Entry

On 17 September, without a declaration of war, the Russian armies swarmed across the almost undefended Polish eastern frontier and rolled westward on a broad front. They met the Germans at Brest-Litovsk on 18 September.



Poland, a country of more than 33 million people, lost the war after 1 month of fighting, which was climaxed with the fall of Warsaw. Above, German bicycle troops passing through one of Warsaw's rubble-strewn streets. Below, Polish defenders of Warsaw being marched to prison compounds by their German captors.—Department of Defense photos.



Thus, all was over in 1 month. A nation of more than 33 million people had lost not only a war, but also its freedom.

The rapidity of Poland's destruction came as a shocking surprise to the entire world. Military history offers few, if any, prior examples of a conquest so



German mechanized riflemen moving along the Bzura River near Browchow, Poland.

rapid and complete. In this victory, the new German air and mechanized forces played an unprecedented part. Nevertheless, it would be wrong to say that German success was due to these two arms alone. Simply stated, Germany's conquest may be attributed to the superiority of the entire German Army over the outmoded Polish war machine. Germany's balanced, well-trained, and ably led forces, which correctly applied the principles of war, found no match in those of her smaller rival.

The Principles of War

Before beginning the discussion of how the Germans applied the principles of war in their Polish campaign, it would be advisable to review the nine principles of war as set forth in Field Manual 100-5, *Field Service Regulations, Operations*.

They are:

1. The objective

2. Simplicity
3. Unity of command
4. The offensive
5. Maneuver
6. Mass
7. Economy of force
8. Surprise
9. Security

The Objective

The objective is the end or aim of the action to be attained by the employment of military forces. The principle of the objective focuses all efforts on the goal or the end sought. Every military activity, operation, or force has an objective. The commander uses all necessary available means to attain his assigned or selected objective.

The ultimate objective of a nation's, or a combination of nations', military operations is the destruction of the enemy's armed forces and of his will to fight. The assignment or selection of objectives, tasks, or missions as logical intermediate steps in defeating the enemy follow. The objective of each element of a military force is selected to contribute the maximum toward attaining the objective of the national cause or of the larger force of which it is a part.

The one principle of war which is controlling, therefore, is the objective. Without an objective, and adherence to it, the other principles become meaningless. There is always the danger that the goal will be obscured, and that the means become the end. The military commander must consider each contemplated action in the light of his assigned or selected objective.

Application.—The military objective of the Germans was simple. It was the destruction of the Polish armed forces and their will to fight. The intermediate objectives assigned to various German forces contributed the maximum toward the annihilation of the Polish forces.

Simplicity

Simplicity is a quality or state of being clear and explicit. Simplicity is essential in military plans and orders if they are to be executed successfully. Plans must be clear and unmistakable. A simple plan well executed usually will succeed whereas a complicated plan may fail.

Application.—Initially, it might appear that the German campaign was a complicated maneuver (see Sketch Map); however, it should be remembered that in this campaign armies and army groups were involved. Each of the five armies (except the Third and Fourth Armies) was given only one primary mission. The initial dispositions of the German troops enabled each of the two army groups to make one main effort in the form of a penetration supported by secondary penetrations.

The basic over-all plan for this campaign was relatively simple. It was a double envelopment, to be followed by another double envelopment; the second envelopment to be contingent upon the success of the first, and to be inaugurated to trap any enemy units which might escape the initial envelopment. The launching of the second double envelopment was to be extremely flexible as to time, place, and forces engaged.

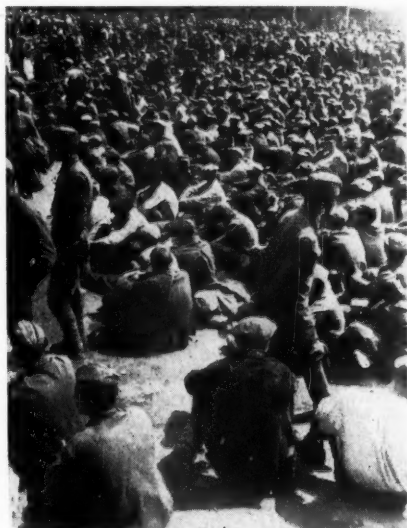
Unity of Command

Unity of command is the singleness of authority created to produce maximum effort and applies to all military duties. Unity of command implies *co-operation* or team play. Each individual in the team must perform his tasks, with all members working toward the common goal of team efficiency. Within the platoon, the total co-operative effort of the squads accomplishes the mission of the platoon. This team play must be applied in all echelons of command.

Each individual contributes loyalty and discipline; each subordinates himself to the accomplishment of the mis-

sion; and each strives to do his job properly under any and all conditions. The commander's responsibility is to provide a high degree of leadership for this fighting team.

Application.—The German campaign against Poland was carried out under the command of Colonel General von Brauchitsch, supreme commander of the German ground forces. He had five armies at his disposal which he divided into two army



Hundreds of captured Polish soldiers in a prisoner of war compound in Lida, Poland.

groups—Army Group North and Army Group South. Also, at his command were all the air and naval forces used in the campaign. The integration of the Air Force into the combined German military effort was so complete that its operations and those of the ground forces were accomplished with perfect harmony.

The Offensive

The offensive is the act of attacking to secure or to maintain the initiative, to preserve freedom of action, and to impose

one's will upon the enemy. The great advantage of offensive action is the initiative, which permits the selection of objectives and of the place, time, and means for accomplishing the mission. *Only by*



A German ammunition truck rolling toward the front with supplies for combat troops.

offensive action can a decisive victory be gained.

Application.—The offensive is one of the principles wherein the German military machine excelled. The German military leaders realized that only through offensive action would it be possible for them to regain Germany's lost provinces. As a result, Germany built up a war machine designed for offensive action while the other European countries pinned their faith on the defensive and the theory of the "bloodless war." The Germans seized the initiative with their opening all-out air attacks on Poland. The combined air and ground forces were able to retain the initiative after penetrating the enemy's lines and exploiting to the maximum the Polish weaknesses as they

developed. The speed with which Poland was conquered is in itself proof of the effectiveness of the German offensive action.

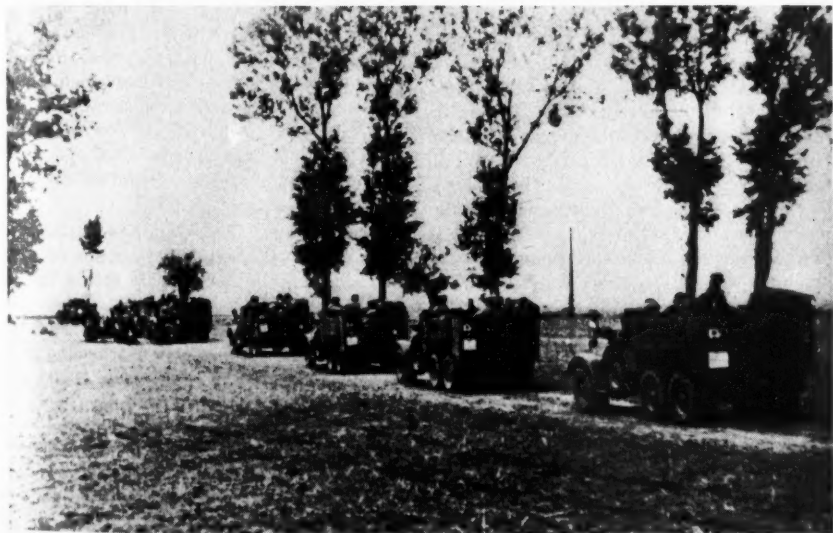
Maneuver

Maneuver is the movement of combat power to a more advantageous position with respect to the enemy. Maneuver can produce superior combat power since only through maneuver can we position all of our military resources so that they apply their full power, or mass, at the decisive point and time. In the offensive, this principle is used to bring superior combat power to close grips with the enemy in order to secure decisive results or to place it where it can attack with the greatest advantage. In the defensive, maneuver is used to avoid or parry a hostile blow or to place combat power in position where it can counterattack.

Application.—German militarists rejected the idea of the impossibility of a future European war of maneuver. They realized that with improvements in aircraft and tank development, the application of the principle of maneuver could be utilized to the utmost. This was done by the creation of the panzer divisions which exploited the speed and mass shock action of armor, and by the employment of aircraft in a direct ground-support role. The Germans also demonstrated the principle of maneuver by the positioning of superior combat power by placing their two army groups in an advantageous position on two sides of Poland. Following the initial air assaults, each army group penetrated the enemy's lines and, taking advantage of its mobility and shock action, succeeded in driving through to the heart of Poland. The two German army groups met east of Warsaw and thus executed a double envelopment of the main Polish forces. Their second double envelopment completely cut off the escaping remnants of the retreating Polish Army.



The Polish campaign proved to Germany, and to the world at large, the correctness of her military doctrine which was based on the principles of war. Above, mechanized German troops pursuing the enemy near Kamion, Poland. Below, a mechanized German rifle regiment advancing near Browchow, Poland.—Department of Defense photos.



Mass

Mass is the concentration of combat power at the decisive place and time and its employment in a decisive direction. Mass is the utilization of overwhelming combat power to strike a decisive blow at the enemy's weak point, to destroy him or to position him for later destruction. The initiative inherent in the offensive permits the selection of the time, place, and way in which the blow is delivered. The massing of combat power to strike a decisive blow is termed the main effort. A small force usually has but one main effort. Large forces may have more than one.

The principle of mass involves more than just assembling superior numbers. It includes utilization of all available facilities—superiority of fire power, supply, supporting services, fighting skill, resolution, discipline, administration, and leadership. Mass is closely related to the other principles of war.

Application.—The Germans massed vastly superior forces on the Polish border prior to attacking. They utilized about 80 percent of their mobilized war strength for this one campaign. The ground forces were divided into Army Group North and Army Group South. Without warning, these two army groups struck the surprised Poles with overwhelming force from two directions, one striking from the north, and the other from the west. These forces were superior to the Polish, not only in manpower, but in the type of equipment and organization. The German military machine was built to be a fast striking force, an organization which would be able to cope with any situation quickly and efficiently. The Polish war machine, organized in the old World War I manner, was slow and cumbersome.

Economy of Force

Economy of force is the use of minimum forces, consistent with safety, in a given area or areas in order that superior

combat strength can be available elsewhere. To concentrate mass in one location, it follows that economy of force must be exercised elsewhere. The minimum force necessary must be employed in all except the main effort. This requires a careful evaluation, particularly where secondary efforts contribute materially to the main effort.

Application.—The Germans demonstrated the principle of economy of force by using 80 percent of the country's total mobilized strength for the Polish campaign. This necessitated the weakening of German forces on her other borders. This principle was again demonstrated by the placing of small defensive forces in the fortifications in the vicinity of Frankfurt. Their mission was to defend in place, thereby making it possible to mass stronger concentrations of combat power for the main effort.

Surprise

Surprise is the act of taking the enemy unaware or in a manner to which he cannot react effectively. The most effective results are obtained when all other principles are combined with surprise. Secrecy of plans, concealment of movements and strengths, feints and demonstrations, and rapidity of movement all contribute to surprise. Variations of habitual operating procedure may frequently be effective in achieving surprise.

Application.—The Germans capitalized on surprise. Without a declaration of war, the Germans launched their attack in the form of an all-out air offensive. It came as a complete surprise to the Poles. They were thinking in terms of 1914, when nations declared war on each other prior to attacking, and when there was a cautious feeling forward by both sides, which permitted the gaining of sufficient time to complete mobilization. The initial air attacks were followed by swiftly advancing German panzer divisions which were able to throw all

Polish forces into demoralized retreat within 8 days.

The Poles also were surprised by the tactics employed by the Germans. The employment of massed armor in panzer divisions with mass employment of air power in a "blitz" war came as a complete surprise not only to the Poles, but to the rest of the world.

Security

Security is protection from espionage, annoyance, observation, or surprise. Through the proper application of security measures the enemy is prevented from interfering with freedom of action and employment of other principles of war. To achieve security is to avoid surprise and retain freedom of action. This is accomplished by calculated and continuous readiness, including the use of essential security forces, suitable formations and dispositions, and continuous and aggressive efforts to secure and evaluate information concerning the enemy.

Application.—The German forces relied upon the speed and strength of their advancing columns for security. A strong mailed fist is its own security. The main advancing column of each of the army groups was given flank security by a smaller advancing force located on its exposed flank. Additional security was furnished

by the German Air Force which had complete air supremacy.

Conclusions

The German campaign in Poland has illustrated how all nine principles of war were applied in achieving an outstanding success. In this campaign, hundreds of thousands of men were involved; however, the principles of war are applicable at all echelons of command, from platoon to army group, theater, or national level. The basic fundamental principles remain the same irrespective of the size of the forces involved.

The selection or assignment of the proper objective is the first and most vital step in the application of all the principles of war. Without a proper objective, the application of the other principles of war become pointless. This principle provides us with the "what." The other principles are guides to the "how" to attain the objective selected.

Napoleon and others have taught us that failure to apply all of the principles to the maximum extent possible may be fatal.

Judge each new technique, weapon, and development in the light of knowledge of the forces and application of the principles.

Be guided by the nine principles of war—all great commanders have—by design, habit, or intuition.

Our armed forces must be brought to adequate strength and kept at that strength as long as Communist military might is capable of threatening any part of the free world. Regardless of the outcome in Korea, we cannot afford to drop our guard for one instant, because that instant could well mark the death-knell of liberty throughout the world.

Admiral W. M. Fechteler

Deliberations on Airborne

Lieutenant Colonel Robert J. Hoffman, *Infantry*
Instructor, Command and General Staff College

The future of our armed forces is in the air. All fighting men and everything they need to fight with in the future and live on as they fight must be capable of movement by air. . . . Airborne troops are our best national security and the world's most promising hope for international security.—Major General James M. Gavin, United States Army.

Strategic air-landings and present-day air power used in mass can together constitute a decisive factor capable of influencing the course of a war.—Major General of Aviation Iu Kostin, Soviet Military Forces.

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THESE are only two of many statements which have been made by eminent military leaders. The libraries and archives of military service schools are replete with similar statements by experienced leaders concerning the importance of airborne and air transportability development, the strategic role to be played by airborne forces in future conflicts, and the effect upon international peace of an airborne force of decisive strength capable of global employment.

The feasibility of independent airborne operations, as well as its impact upon the methods of modern warfare, has general acceptance in military circles. Yet, despite this nod of approval, doctrine and technique concerning the manner of execution of such operations have not been fully developed.

It is the purpose of this discussion to examine the nature of this vast new field in the problem of exerting one's will upon the enemy, to consider the principal reasons underlying the advancement of airborne operations from a purely tactical weapon to one of strategic and decisive

importance, and to determine those operational aspects which assume major significance in the successful execution of independent airborne operations. To facilitate the accomplishment of these purposes, the types of airborne operations will be defined and methods whereby new doctrine is developed will be discussed briefly.

Types of Airborne Operations

From the viewpoint of technique of execution, there are two basic types of airborne operations: the early link-up operation and the independent operation. From the viewpoint of mission or purpose, two additional types of operations may be included: raids and special operations. Each is described below.

Early link-up.—In an early link-up airborne operation, after seizure of the initial objectives, a planned early surface link-up is effected between the airborne units and other friendly forces. Because of the anticipated early link-up, no substantial build-up of troops, supplies, and equipment is planned, other than those delivered in the assault echelon and follow-up. The size of the force involved may vary from a battalion combat team to an airborne corps.

Independent.—Independent airborne operations may be described as the extension of tactics into the field of strategy. Such operations usually involve a deep

envelopment into enemy-held territory or the seizure of a base located a considerable distance from friendly territory. The initial objective is the establishment of an airhead from which further ground, air, or naval operations may be launched. The eventual juncture with other forces may or may not be planned. However, a substantial build-up of personnel, supplies, and equipment is planned. Support is furnished entirely by air for a prolonged period of time. The size of the force involved will vary as influenced by the mission, the availability of forces, and the enemy situation. However, it is considered that independent airborne operations will normally involve large forces of corps or army size, militarily balanced, and capable of independent action.

Raids.—The feature which distinguishes a raid from other airborne operations is that plans are made for the withdrawal of the force after the accomplishment of the mission. The mission is normally the destruction or neutralization of enemy forces, installations, facilities, headquarters, or personalities. Raid-type operations may assume the aspects of either early link-up or independent type operations.

Special operations.—Special operations include such operations as: show-of-force, assistance to partisans and guerrilla forces, and those operations which are primarily political in nature. Airborne operations of this category normally re-

word of Department of the Army Field Manual 100-5, *Field Service Regulations, Operations*, describes a technique whereby tactical doctrine is developed:

Reasoned conclusions concerning the tactical effect of a new development form the basis for new tactical doctrine. In the vast majority of instances, a new development merely extends the capabilities of existing agencies without necessitating radical revision of existing doctrine . . . In exceptional cases a development may possess potentialities which dictate radical revision of the conduct of tactical operations. Thus the crossbow, firearms, the machine gun, and the airplane, in turn resulted in major changes in the tactical doctrine of their periods.

Today, as in the past, concepts of warfare must be reviewed continuously in light of actual and anticipated developments in weapons, transportation, equipment, and other agents of war. Research and reflection concerning the nature of war must not stop with this, however, but must constantly point the way for the design and development of new equipment of war.

With this in mind, an inquiring examination of the developments of recent years should produce the factors which nurtured the conception and growth of the independent airborne operation. Among others, the following factors appear to have influenced this growth to the greatest degree:

1. The advent of air power as a decisive military weapon.
2. Developments in the field of atomic energy.

If a nation is to be victorious in future wars, it must integrate its military organization and its strategy with the speed of air movement. In short, it must be capable of large, independent airborne operations

quire co-ordination at the Department of Defense and State Department level. Dependence upon the situation, they may assume the aspects of either early link-up or independent type operations.

The following statement from the fore-

3. The knowledge gained from past airborne operations.

The term *air power* is all-inclusive. A nation's air power is measured not only by the *number* and *type* of military and civilian aircraft available, but also by

its scientific and technical ability to improve the means of air movement, by its industrial capacity to produce these means, and by the availability of essential natural resources.

With its air power, a nation seeks to control the use of the air, to deny its use to the enemy, and to reserve this third dimension of movement completely for itself.

But why will control of the air be so vital in future conflicts? The pages of history provide the answer. Here it can be found that the tempo of war is influenced largely, and in fact is determined, by the fastest means of transportation of its time.

In the past, the sea provided the most efficient means of transporting military forces and fire power. Thus all conflicts during these years were geared to the speed of sea movement. World War II, as well as seeing the sea exploited to its fullest as a medium of military transportation, marked the beginning of the use of air transportation as a means of transporting decisive combat power to dominating positions.

For today and the foreseeable tomorrow, the air is and will be the medium of most efficient transportation. Tactics and techniques of wars to come, therefore, must be adapted to the speed of movement by air. To army forces this means independent airborne operations—the movement and support of ground combat power by air, independent of other conventional surface means.

It would be remiss in any mention of air power not to recognize the theories of Douhet and De Seversky (as well as others) that complete victory can be obtained solely through the application of air power. This is indeed a controversial issue, which is hotly argued in military circles. It is not within the scope of this discussion to attempt to resolve this question. However, it does appear that in

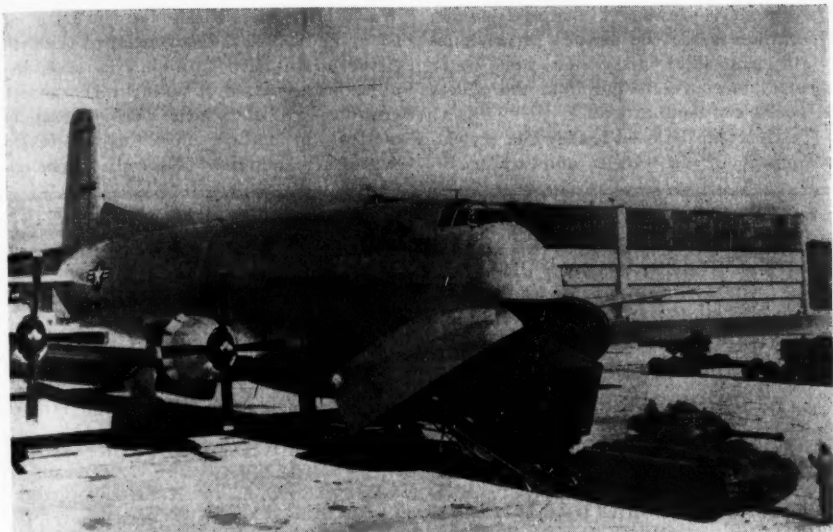
order for any future bombing to be decisive, there must be a human follow-up force to exploit the disorganization that will exist. And moreover, can it not be stated that the independent airborne operation represents the highest development of the use of air power in war?

The atomic authorities' visions of the effect of the atom bomb on future military operations are many and varied. It has been proclaimed as the *absolute weapon*, *Promethean*, and *cataclysmic*. Still others look upon it as a military force in itself which voids requirements for other military forces. These views were prevalent, particularly in the years immediately following Hiroshima and Nagasaki. Time and the data gained by tests, research, and study have tempered these views. As always, unless the mind dominates the weapon, the weapon will tend to dominate the mind.

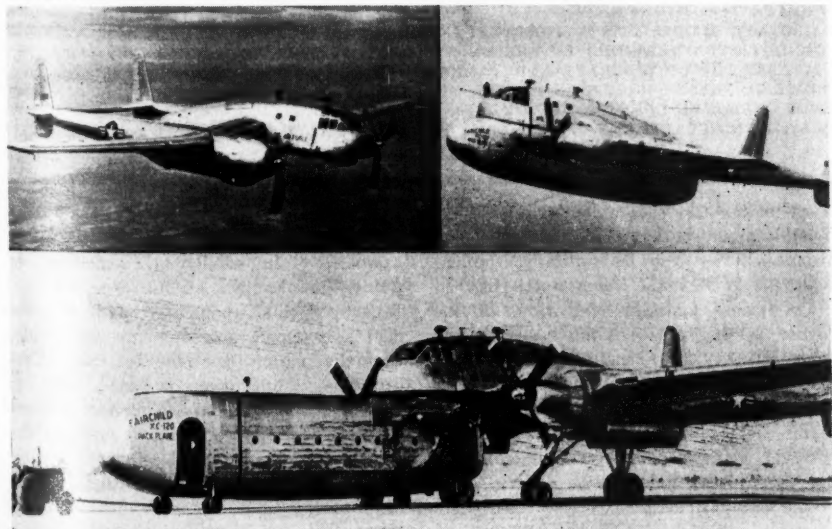
Calm study of the bomb in the light of military science discloses:

1. It is the most devastating weapon developed to date.
2. Despite its destructiveness, the attacker must follow (or least be prepared to follow) the employment of the bomb with a human force, to exploit fully this destructiveness.

These statements have been generally accepted by the military leaders today. Simultaneously, however, they also state that *dispersion* must govern all operations in the future, that a concentrated build-up, similar to that in support of the Normandy assault, would provide a worthwhile target for a devastating atomic attack. Therefore, military forces must combine dispersion during the preassault phase of any future operation while still maintaining the ability of *rapidly* massing decisive combat power during the assault phase. This rare blend of divergent operational requirements can only be obtained by exploiting *mobility* and *surprise* through air movement to concentrate de-



An airborne assault must have full logistical support for an extended period of time. Above, this C-124 Globemaster II can carry a load of 50,000 pounds about 850 miles. Below, three views of the XC-120 Pack Plane with detachable fuselage: flying without fuselage; airborne with fuselage; and removing fuselage.—Department of Defense photos.



cisive combat power at strategic points. Operations after the assault phase must again emphasize dispersion and other security measures to minimize the effects of possible atomic attack.

Thus, it can be seen that while the development of air power and air move-

World War II. From the invasion of Sicily in 1943 to the movement of the 11th Airborne Division to Japan in 1945, the allies participated in many airborne operations, all of which were essentially tactical in nature involving a varied strength in numbers of troops. These op-

FACTS AND ESTIMATES USED TO COMPUTE AIRCRAFT REQUIREMENTS

| | |
|--|---------------------------------|
| 1. AVERAGE DIVISION SLICE IN AIRHEAD | 25,000 ¹ |
| 2. TOTAL STRENGTH OF FORCE | 525,000 ² |
| 3. TOTAL WEIGHT OF FORCE | 525,000 SHORT TONS ³ |
| 4. ASSAULT ECHELON OF AIRBORNE DIVISION: | |
| a. AIRCRAFT REQUIREMENTS: | |
| (1) C-119 | 400 ⁴ |
| (2) C-123 | 200 ⁴ |
| b. WEIGHT OF ASSAULT ECHELON | 5,000 SHORT TONS ⁴ |
| 5. DAILY MAINTENANCE REQUIREMENTS PER DIVISION SLICE | 500 SHORT TONS |
| 6. AIRCRAFT LIFT CAPABILITIES: | |
| a. MEDIUM AIRCRAFT (C-119 AND C-123) | 8 SHORT TONS |
| b. HEAVY AIRCRAFT (C-124) | 22 SHORT TONS |

¹ THIS FIGURE IS SOMEWHAT LESS THAN THAT FOUND IN NORMAL GROUND OPERATIONS. SUCH A REDUCTION IS POSSIBLE SINCE MANY OF THE SERVICES NORMALLY PERFORMED IN THE ARMY AREA COULD BE ACCOMPLISHED AT THE REAR BASE.

² A SLICE OF 25,000 × 21 DIVISIONS.

³ BASED ON 1 TON PER MAN WHICH EXPERIENCE HAS SHOWN TO BE REASONABLY ACCURATE.

⁴ AIRCRAFT REQUIREMENTS FOR THE ASSAULT ECHELON OF AN AIRBORNE DIVISION CANNOT BE DETERMINED BY USE OF ANY ONE METHOD. THE CHARACTERISTICS AND CAPABILITIES OF AIRCRAFT AND VARIOUS TACTICAL CONDITIONS MUST ALL BE CONSIDERED. THESE FIGURES ARE BASED ON DEPARTMENT OF THE ARMY FIELD MANUAL 57-30, *AIRBORNE OPERATIONS*.

⁵ BASED ON DEPARTMENT OF THE ARMY FIELD MANUAL 57-30, *AIRBORNE OPERATIONS*.

FIGURE 1.

ment makes strategic airborne operations feasible and practical, the development of atomic energy and its military applications tends to make them necessary.

To discuss airborne operations of the future intelligently we must search the past. Military libraries are stocked with histories concerning the details of past airborne operations. It is not intended to recall them in detail to the reader here; however, a few general comments concerning these operations are in order.

The early link-up or tactical airborne operation was a classic development of

operations, in addition to proving the soundness of early link-up operations, produced a wealth of knowledge and experience to guide the planners of future operations. It is upon this experience, modified to reflect subsequent developments and study, that the present doctrine for early link-up airborne operations is based.

In addition, this experience also pointed up the feasibility of moving and supplying large airborne forces of corps or army size to points a considerable distance behind enemy lines under favorable conditions of air superiority and weather.

Activities during the postwar years such as training maneuvers, the Berlin Airlift, the Korean conflict, and intensive study and research have re-emphasized and validated the practicability of this growing concept.

Thus, the acceptance of independent

ing conflict. However, a more concrete answer is desirable. Among others, the following missions appear practical:

1. *Continental invasion.*—Any mission that might conceivably be accomplished by amphibious assault could be accomplished by airborne assault. The broad

AIRCRAFT REQUIREMENTS¹

D-DAY

a. AIRCRAFT REQUIRED TO LIFT ASSAULT ECHELONS OF NINE AIRBORNE DIVISIONS:

| | |
|-----------|-------|
| (1) C-119 | 3,600 |
| (2) C-123 | 1,800 |

D PLUS 1 TO D PLUS 18

a. WEIGHT OF ELEMENTS TO BE MOVED:

| | |
|-----------------------------------|---------------------------------|
| (1) REMAINDER OF FORCE | 480,000 SHORT TONS ² |
| (2) DAILY MAINTENANCE FOR 19 DAYS | 199,500 SHORT TONS ³ |
| (3) 7-DAY SUPPLY BUILD-UP | 73,500 SHORT TONS |

TOTAL WEIGHT 753,500 SHORT TONS

b. TOTAL AIRCRAFT SORTIES REQUIRED:

| | |
|--------------------------------|--------|
| (1) USING MEDIUM AIRCRAFT ONLY | 94,062 |
| (2) USING HEAVY AIRCRAFT ONLY | 34,204 |

c. DAILY AIRCRAFT SORTIES REQUIRED DURING PERIOD:

| | |
|--------------------------------|--------------------|
| (1) USING MEDIUM AIRCRAFT ONLY | 5,226 ⁴ |
| (2) USING HEAVY AIRCRAFT ONLY | 1,900 ⁴ |

¹ ONE SORTIE (FLIGHT) PER DAY PER AIRCRAFT.

² TOTAL WEIGHT OF FORCE LESS WEIGHT OF ASSAULT ECHELONS OF NINE AIRBORNE DIVISIONS.

³ DOES NOT CONSIDER ACCOMPANYING SUPPLY THAT WOULD BE CARRIED TO THE AIRHEAD BY ALL UNITS. FOR PLANNING PURPOSES, ALL UNITS ARE CONSIDERED TO BE IN THE AIRHEAD DURING THE ENTIRE PERIOD WHEN ACTUALLY THEY WOULD BE PHASED IN.

⁴ FIGURES ARE VARIABLE AND MAY BE USED IN ANY COMBINATION, SUBJECT TO AVAILABILITY OF AIRCRAFT AND TYPE LOADS.

FIGURE 2.

airborne operations is not without foundation. The independent airborne operation is a natural result of critical analysis of past experience viewed in light of subsequent scientific and technical developments.

Possible Missions

What type of missions might be suitable for independent airborne operations? This may be answered best by stating that, given available airborne forces, the use of independent airborne operations will be limited only to the imagination of the commander and the scope of the exist-

objective would be similar but the terrain objective would be deeper and more decisive. The airborne assault might well be supported by one or several subsidiary amphibious landings.

2. *Continuation of the offensive.*—Relentless pressure could be maintained by launching new airborne operations from the invasion airhead aimed at targets deeper in the defender's homeland, rather than waging a major ground offensive. In this way, the advantages of numerical superiority and a large land mass possessed by possible belligerent nations may be re-

duced. These advantages are neutralized by complete exploitation of scientific and technical skill.

3. *Destruction of strategic installations.*—The seizure and destruction by airborne attack of vital installations unsuitable for destruction by other means is a suitable mission. The accomplishment of the task may or may not be followed by withdrawal of the airborne force.

4. *Exploitation of air or guided missile bombardment.*—The defender's will to resist can be completely broken by following bombardment (to include atomic mis-

sion) with an airborne attack. In this way, weaknesses of the defense may be exploited and a rapid decision gained.

There are many other missions that may be visualized. The foregoing are only a few examples.

UNITED STATES AIRCRAFT PRODUCTION—1940 TO 1945¹

| | |
|-------------------------|----------------------------|
| 1. FIGHTERS | 100,000 |
| 2. BOMBERS | 100,000 |
| 3. TRANSPORTS | 25,000 ² |
| 4. TRAINERS, AND OTHERS | 75,000 |
| TOTAL | 300,000³ |

¹ IN ROUND FIGURES.

² NOTICE THAT THIS IS LESS THAN 10 PERCENT OF TOTAL PRODUCED.

³ IN MARCH 1944 ALONE, 9,000 AIRCRAFT WERE PRODUCED.

FIGURE 3.

made available to the commander. In this connection it is pointed out that the decision to conduct independent airborne operations must be made *early* (preferably prior to the outbreak of hostilities) in the formulation of national or allied strategy. This is necessary if plans are to be realistic because of the *time* required to train troops properly in the technique of airborne attack.

2. That transport aircraft in adequate numbers and of proper types will be available. Again, if this assumption is to be realistic, the decision to conduct such operations must be made early. The attacker must have available sufficient aircraft whose flight characteristics facilitate and simplify the movement of large numbers of troops and tonnages of supply to the objective.

Hypothetical Situation

In order to facilitate determination of the critical factors in planning and executing an independent airborne operation, assume that the Combined Joint Chiefs of Staff have assigned the mission of continental invasion—similar to the first example given above—to an airborne force of 9 airborne and 12 infantry divisions. Assume further that the invasion commander intends to employ the assault elements of the 9 airborne divisions on D-day and to phase into the airhead by D plus 18 the remainder of the airborne divisions,

This assumption may seem fantastic to

some. However, simple computation shows it is quite reasonable. Figure 1 contains certain facts and logical estimates needed to determine aircraft requirements for this operation. Figure 2 shows the sorties required each day to implement the plan of the invasion commander, using present aircraft. (Aircraft sorties required to move the airborne force less the assault elements of the airborne division are computed through the use of the *weight method* which is considered sufficiently accurate for planning purposes.) Figure 3 shows United States aircraft production from 1940 to 1945. It can be seen from a comparison of Figures 2 and 3 that, with a simple shift in emphasis, the transport aircraft required can easily be produced.

3. That marshalling areas, adequate in number and size and sufficiently dispersed, will be available. This consideration is indeed a serious problem. However, it will be simplified as the size of the aircraft employed increases and flight characteristics improve. Larger aircraft will reduce the number of planes needed and hence the number of take-off fields required. The convertiplane, a plane with the level flight characteristics of conventional aircraft but capable of rising and descending vertically, would completely solve the problem of dispersion during marshalling.

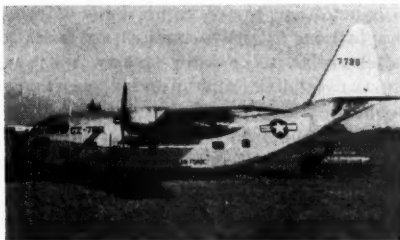
Other assumptions concerning the objective, relative strengths, weapons, and capabilities, may seem pertinent. However, the assumptions given above provide an adequate planning base from which to determine the critical factors of the operation.

Critical Factors

It will be noted that the following factors apply to all operations, ground as well as airborne, in varying degrees. It is their degree of application in independent airborne operations that causes them to be critical—critical in the sense

that failure to appreciate their marked significance may cause the entire operation to fail.

1. Air superiority.
2. Logistical support.
3. Weather.
4. Objective area.
5. Rate of build-up.
6. Enemy's ability to react.



Above, the Air Force's C-123 Avitruc assault transport. Below, the C-119 Packet.



7. Intelligence.
8. Balanced force.

These factors are discussed below and, where appropriate, their application in independent airborne operations is compared with that in early link-up operations.

Air Superiority

Air superiority is a *primary prerequisite* for the conduct of independent airborne operations. The degree of air superiority is such that a condition approaching air supremacy must exist. This requirement is brought about primarily because of the *complete dependence* of the operation upon secure air lines of com-

munication. Air lines of communication must be secure since a large number of unarmed transport aircraft will be used in moving troops and supplies for an extended period of time. It may be stated that, apart from other factors, the geographical limits of the attacker's air supremacy determine the depth of the operation.

In addition, to secure air lines of communication, extensive tactical air support is essential to counter enemy reaction to the landing and provide necessary support for planned operations. This points up the need for the early introduction of fighter aircraft into the airhead. The majority of such aircraft will probably be jet propelled and, therefore, preparation of suitable landing fields poses quite a problem. This may be reduced however, by the development and use of new soil hardeners, new air-transportable construction equipment, and new devices designed to reduce the length of runways required.

The degree of air superiority required for early link-up operations is much less than that needed for independent operations since, in the former, the airborne force is dependent upon air lines of communication for only a short period. Small-scale, limited objective operations can be executed even if the enemy has air superiority. His air superiority can be counteracted temporarily by massing friendly fighter protection, by night landings, or by exploiting the element of surprise. However, such operations must be undertaken with caution and the value of the objective carefully weighed against probable losses.

Logistical Support

Logistical support is probably the most important factor because of the implications of having to provide complete logistical support for the airborne force over air lines of communication for an extended period of time. The continuing

logistical support problem is the principal reason for requiring the extensive degree of air superiority pointed out above. In independent airborne operations, all phases of supply will occur—assault, follow-up, and maintenance and build-up. The entire logistical support program must be more complete than in early link-up operations. All logistical services are required within the airhead and cannot await juncture with other forces. The requirement for adequate and timely support in the airhead creates a tremendous problem of organization and co-ordination at the rear bases. A complex problem also exists in providing for the receipt (including unloading), classification, documentation, and disposition of supplies and equipment delivered to the airhead.

That large numbers of troops can be maintained by air transport is apparent from air transport operations in the past. Consider, for example, the Berlin Airlift. More than 2 million people were supplied almost entirely by air from June 1948 through September 1949. The average daily tonnage moved by air during the period April 1949 to July 1949 was 8,000 tons with a peak load of more than 12,000 tons on 16 May. This was accomplished using obsolescent C-47, C-54, and C-82 transport aircraft. Of course, this was done under peacetime conditions which permitted the employment of aircraft in a "stream" system. In the early phases of an independent airborne operation, the use of such a system may not be possible. Transport aircraft carrying supplies would probably have to fly in protected formations or convoys. Later, however, the "stream" system could be adopted which would permit delivery of maximum tonnages with the aircraft available.

Despite the present and potential capabilities of air transport, logistical support requirements of the airhead must be kept to a minimum. Troop list units must be scaled down—not arbitrarily, but

scaled down as a result of critical and detailed analysis by their respective commanders. Similarly, the troop list itself must be scrutinized in order to eliminate those units whose services are not essential. Some services may be performed more efficiently at rear bases than in the airhead itself. (For example, is it better to bake bread at the rear base and fly it forward, or is it more efficient to move a bakery unit to the airhead?) Troops in the airhead must accustom themselves to living with essentials—without the luxuries known in World War II. Exhaustive efforts must be made at all echelons to reduce the number of personnel in the airhead and their corresponding logistical requirements.

Weather

History shows that the conditions of weather greatly affect the outcome of any operation. It is considered a critical factor in independent airborne operations primarily because adverse weather has a much greater effect on the use of air lines of communication than on ground lines of communication. The effects of adverse weather can be minimized by:

1. More accurate long-range weather forecasts.
2. Maximum use of improved navigational aids.
3. Improving the technique and training standards for all-weather flying.

It appears likely that present and future developments may permit all-weather flying. This may virtually eliminate adverse weather as a restraining factor, and may even cause it to be considered as an advantage in situations in which security and surprise are particularly important.

Objective Area

Needless to say, the objective area will generally contain a target of strategic importance. Irrespective of this, however, the objective area in an independent air-

borne operation, from a logistical standpoint, must offer an adequate road net and a large number of usable airfields or landing areas which will facilitate airfield construction. If airfields are not available, the terrain must be suitable for airfield construction in order that the required rate of build-up of forces may be met. This requirement for airfields and air-landing areas, of course, will be much reduced with the development of the convertiplane. Tactical characteristics of the objective area, from both the offensive and defensive standpoints, are essentially the same as in other airborne operations. However, independent airborne operations which involve *ground* exploitation from the airhead may require additional emphasis on suitability of the terrain for subsequent offensive operations.

Rate of Build-Up

The rate of build-up is more significant in independent airborne operations than in early link-up operations, as early reinforcement by surface link-up is not contemplated. This factor is directly related to the availability of airfields and airfield sites. Build-up of troops and supplies in the airhead must be faster than the enemy's build-up against the airhead. The degree of success in accomplishing this may determine the success or failure of the operation.

Enemy's Ability to React

An enemy build-up against the airhead which is faster than the rate of build-up of the airborne force could result in defeat of the airborne force. This factor, considered in connection with the physical characteristics of the objective area, dictates what the rate of build-up of combat power *must* be and greatly influences the phasing of forces into the airhead.

Intelligence

Accurate and detailed intelligence is important in all operations. The follow-

ing aspects of intelligence are particularly important in independent airborne operations: information concerning the availability and condition of existing airfields and airfield sites; enemy dispositions and capabilities, particularly armored and antiaircraft artillery units; deception measures; and counterintelligence. Lack of accurate intelligence concerning terrain, airfields, enemy dispositions and capabilities, and local resources may result in an improper phasing of troops (both in type and in number) and supplies into the airhead. The lack of particular units required to accomplish specific tasks at specific times could have a serious effect on the final outcome of the operation (such as insufficient engineers to repair and construct the required number of airfields).

The depth of the operation greatly increases the difficulty of obtaining information. Ruses, feints, diversions, and false information may be used to deceive the enemy and delude him into expecting and preparing for operations other than the one being planned. This will assist in gaining surprise, which is of particular importance in the early phases of the operation.

In this connection, from the time the decision is made to conduct the operation until the day the airhead is established, effective counterintelligence measures are required for security reasons. This will also contribute to the degree of surprise attained. It must be remembered, however, that the advantage of initial surprise may be offset by the enemy's eventual ability to reorganize and react to the operation.

Balanced Force

In independent airborne operations, the airborne force must have the same military balance and self-sustaining characteristics as any army force participating in extended operations. This includes com-

bat support and service support units, as well as combat units. The requirement for a force capable of sustained action is much greater in independent operations than in other types of airborne operations, as no early surface reinforcement is planned.

Conclusions

The development of air power as a decisive weapon, the evolution of air movement as the fastest means of transporting combat power, the advent of atomic weapons, and the experience gained from past airborne and air-transported operations, all considered, emphasize the *feasibility* of executing independent airborne operations, and the *necessity* for such operations in the conduct of a future war.

If a nation is to be victorious in this conflict, it must integrate its military organization and its strategy with the speed of air movement. It must exploit this speed and mobility in order to effect mass and surprise, to overcome terrain obstacles either in terms of individual terrain features or vast terrain areas, and to counterbalance numerical superiority which the enemy may possess. In short, it must be able to conduct independent airborne operations if it is to emerge the victor.

In the planning and conduct of independent airborne operations there are certain operational aspects which, because of their impact upon the outcome of the operation, assume a degree of criticality that isolates them from other important considerations. These critical factors include air superiority, logistical support, weather, objective area, rate of build-up, enemy's ability to react, intelligence, and balanced force.

The success or failure of the operation will reflect the manner in which the commander and planners concerned appreciate these factors.

Organization for the Production And Delivery of Replacements

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

PERSONNEL in all echelons of command in World War II were critical of the inability of supporting forces to provide the number of replacements required to fill their ranks from casualty and other losses. Of equal consideration was the apparent lack of importance attached to the replacement problem by virtually every echelon of the Army.

The number of individual replacements shipped overseas in World War II far exceeded actual losses from all causes. It is clear, therefore, that many errors in organization, procedure, and utilization of replacements existed to contribute to the charges that adequate replacement support was not provided.

Trial-and-Error Methods

In all fairness to the operation of the World War II replacement system, we must recognize that firm and complete plans were not prepared in advance. Organization, provisions for installations, trained personnel to operate a replacement system, and operating procedures were all developed by trial and error. The

purpose of this article is not to criticize the World War II system but to point out some of those errors in an effort to avoid their being repeated in a future major war. Now is the time to study the errors of World War II operations and prepare an organization and procedures to meet possible future situations. In the event of another major war, the United States cannot expect to have the time for training personnel with which it was favored in World War II. The replacement system must be prepared at the outset of hostilities to provide large numbers of trained personnel by well-organized and efficiently controlled procedures.

Replacements Defined

Prior to discussing replacement organization and procedures, it is appropriate to reach a common understanding of the term "replacement." This may seem basic, but as late as 1942 one of our key commanders in World War II considered the replacement problem as "limited to those individuals necessary to replace deceased personnel, an almost negligible requirement." This concept of a replacement is not the broad and realistic meaning which must be understood. When considering replacements, there is a big problem in visualizing the total scope involved, the main problem being to include estimated requirements, and to foresee the necessity

We must have clearly defined responsibilities and centralized control if we are to have an efficient system for the procurement, training, and distribution of replacement personnel in the event of mobilization

for timely action in order to provide the individuals at the required time.

Replacements are individuals assigned or destined for assignment to fill a vacancy in an organization. The term includes hospitalized personnel, previously dropped from the rolls of an organization, when discharged from a hospital and returned to duty.

Replacements for a system of rotation are a vital consideration to future military operations, particularly in view of the present United States system of maintaining units in the line over indefinite periods. Not to be forgotten in estimating replacement requirements is the necessity of keeping the "replacement stream" ready to flow at future dates. As an example, assume that it requires approximately 27 weeks from the time of induction until delivery overseas. Further, using that figure as a basis and assuming that an average weekly requirement exists for 10,000 replacements in an oversea theater, there must be a minimum of 270,000 persons at various stages within the replacement stream to meet this continuing weekly requirement of 10,000 men.

You can readily realize that the term "replacement" is deceptive and has a broader meaning than the initial example of merely replacing deceased personnel.

Control Responsibility

In this discussion of an organization to produce and deliver replacements, attention will be focused primarily on the three major levels of control and responsibility in which replacement operations can be divided. The first is exercised at general staff levels in the Department of the Army, the second is executed at other departmental and Zone of Interior levels, and the third is exercised within the oversea theaters.

An initial weakness in World War II replacement operations was the failure to establish clearly defined "active" responsibility and authority for all phases

of replacement production and delivery. *Active responsibility* is emphasized, because the mere statement of defined responsibilities on paper is not adequate. The responsible agency must actively execute the assigned responsibilities and resist infringement into its assigned zone of action by other Department of the Army agencies. During World War II at Department of the Army level (then the War Department), G1, G3, Army Service Forces, and The Adjutant General all shared in the responsibility for the production and delivery of replacements.

This divided responsibility was bound to create confusion, omissions, and conflicts. Agencies exploited the confusion to obtain control of their specialized interests. An example of this is the confusion in December 1942, when Headquarters, Army Service Forces (ASF), was authorized to control personnel functions Army-wide, under War Department policies. This resulted in a using agency on the same level as the Army Ground Forces (AGF) and the Army Air Force (AAF) controlling replacement flow. In January 1943, this procedure was modified so that all three commands exercised primary control over their respective training facilities. However, Headquarters, Army Service Forces, continued to exercise overlapping control in the distribution field.

One assistant chief of staff of the general staff at Department of the Army level should exercise responsibility for the production and delivery of replacements. Either the G1 or G3 should have this responsibility. In either case, The Adjutant General should be the principal departmental operating agency for personnel of all branches and services without exception. This does not preclude other general staff interest, co-ordination, or involvement in fields of primary interest such as training programs, construction, and transportation; but the control, procurement, and distribution of personnel

for all training output must be in one office.

At the present time, G1, Department of the Army, controls the allocation and distribution of manpower. This is in consonance with experience gained from World War II replacement operations.

In World War II, there was considerable diffusion of responsibility within the War Department agencies as to the control of replacement facilities. The Army Ground Forces, directly under the War Department, was responsible for the replacement training for the combat arms (infantry, artillery, and cavalry) and the Army Service Forces was responsible for the replacement training for the technical services. However, as far as the specific operation of the technical service training installations was concerned, both the chiefs of the technical services and the service commands (geographic commands now replaced by continental armies) were involved in varying degrees of responsibility. A concept, still prevalent in some agencies, which contributed to the technical service chiefs being involved as action agencies is that the production and distribution of their respective training agencies was a highly specialized product, and the technical service involved was the agency best qualified to control the production and distribution of this specialized product. Headquarters, Army Service Forces, apparently went along with the system of permitting several of the technical service chiefs to control their own replacement production and distribution, or at least followed their desires very closely on allocating outputs.

The reorganization of the Army in 1946 prevented a repetition of some of this confusion by eliminating the Army Service Forces. However, care must be exercised in delineating responsibility between the Army Field Forces, continental armies, and each of the technical services, so that controls for production and distribution

for all categories of replacement personnel are exercised by one departmental agency. Decentralization on rapid expansion, such as full-scale mobilization, must be limited to producing the product—not to controlling the input and output of the service involved.

During World War II, the Army Ground Forces established a Replacement and School Command to control combat arms replacement training centers and service schools (antiaircraft, armor, and tank destroyer commands were initially excepted but later placed under this command). This provided a single agency to command, co-ordinate, and control these combat arms training facilities, rather than have each arm operate independently and without co-ordination. Unfortunately, personnel economies and reduced scope of continental activities resulted in the Replacement and School Command being discontinued in 1946, even though it had been initially included in the reorganization plan. There has been considerable discussion for and against a similar organization—to include all service and combat arms training facilities (replacement training centers and schools), under centralized control and reporting directly to the Army Chief of Staff—as a command co-equal with the Army Field Forces. This article does not propose to take sides in this controversy, but rather to point out that World War II history shows that much confusion would have been eliminated had all replacement facilities been under a single centralized control.

At the present time, the Department of the Army G1 controls procurement and distribution of replacement personnel. The Office, Chief of Army Field Forces (OCAFF), directs field training for the combat arms and to a certain extent directs training for the technical services, however, the technical service chiefs do so for the greater part of their respective services.

Continental army commanders also are involved as they exercise command control of training divisions. The Office, Chief of Army Field Forces, is not directly involved in command of training facilities nor in the allocation and procurement of personnel for training units. These are bulk allotment units. Army commanders are responsible for the allocation of spaces and for presenting operating requirements to The Adjutant General for these units in the same manner as they are responsible for all other units within their commands. Continental army commanders also conduct training inspections of the training divisions based on OCAFF training policies. However, there is still a degree of centralized control and responsibility which, although workable in restricted peacetime operations, does not have the flexibility or capabilities of a separate command established to command and control all training facilities.

As previously mentioned, the Replacement and School Command, as established by Headquarters, Army Ground Forces, was a system which ensured uniformity in training and organizational flexibility in changing training requirements, the ability to apply experience gained from operating a multiple number of similar organizations, and to effect a "one mission" effort to providing qualified replacements. Within the services, however, the Army Service Forces technically controlled all training facilities, but each technical service chief employed considerable latitude in operating his respective schools and training centers. The Zone of Interior service commands were under Headquarters, Army Service Forces, and also were involved at varying times and in varying degrees on training center activities of the technical services. Another confusing Zone of Interior arrangement was that both AGF and ASF operated separate overseas replacement depots for the out-shipment of replacements to overseas theaters.

At the present time, the continental army commanders and chiefs of technical services are not involved in the procurement of the input or the distribution of the output of the replacements which they train. Therefore, the error of a using agency controlling the flow of replacements, as ASF did in World War II, is not as great as it might be. Although technical services are responsible for providing trained replacements, G1, Department of the Army, controls the input of trainees and the distribution of the output from schools and training centers. G1, Department of the Army, must continue to exercise a firm hold on the allocation of all output from training centers to assure that these controls do not become too broad. The overseas replacement depots (now designated as personnel centers) process all Army personnel, thereby dispensing with the World War II practice of separate overseas shipping facilities for combat and service personnel. If existing personnel centers cannot meet the workloads, the solution is the establishment of more personnel centers—not the establishment of specialized centers controlled by the chiefs of technical services.

Although it is believed that a separate organization to control training installations would ensure better control and uniformity, the present system is workable as a peacetime measure, provided that the G1, Department of the Army, controls the input and distribution of the output, that the technical service chief's responsibilities are restricted to operating training facilities and turning out the specialists directed, and that personnel centers for all Army overseas replacements are maintained. In addition, the G3, Department of the Army, and OCAFF must ensure that the technical service chiefs and continental army commanders operate training establishments in a generally uniform manner. This does not preclude the technical services from recommending the distribution of the output and determining the require-



A replacement system must be prepared to provide large numbers of trained personnel by well-organized and efficiently controlled procedures. Above, ground troops boarding a ship at a Japanese port for movement to Korea. Below, a detachment of infantrymen in Japan waiting to enplane for air shipment to Korea.—Department of Defense photos.



ments for the respective training facilities—so long as G1 maintains the control of the action taken.

Control of Oversea Replacements

The organizational confusion which existed in the Zone of Interior during World War II on replacement procedures was just as confusing in all overseas theaters.

In most theaters, a quota of T/O&E replacement depots was provided each theater to process replacements. For the most part, these depots were initially under the base section commanders for command control and operation. To say that control was loose and diverse is an understatement. Lack of co-ordinated and centralized control resulted in a replacement program which permitted delay, diversion of replacements, and low morale. The number of depots was not sufficient to handle the replacements involved so that many of the problems were increased by the overcrowding of replacement facilities.

By 1944, this inadequate organization for the control of replacements had reached such proportions that the War Department convened representatives of theaters to develop an organization which would remedy these shortcomings.

The summarized result, subsequently put into effect for each theater, was to establish a theater army replacement command (TARC) which was directly responsible to the theater commander, on the same level as the communications zone and army group. This command was to be responsible for the command of all replacement depots, for the receipt of replacements from the Zone of Interior, for the distribution of replacements according to theater army instructions, and for the operation of the in-theater casual and theater retraining programs.

It is difficult to see why this was not a readily acceptable organization, but to date there are advocates opposed to a theater replacement command. The principal arguments against the system are that:

1. Replacements are a supply item and should be handled by the communications zone.

2. Most replacement facilities are in the communications zone and it is logical that, as administrative installations, they should be under the command control of the communications zone.

3. The communications zone commander should not be required to support nontactical units within his geographic area without being able to exercise command control over them.

4. The theater headquarters can control distribution as well through directives to the communications zone commander as it can through a separate commander.

However, World War II experience proves that a using agency should not control replacement personnel. Unfortunately, under the system, an opportunity exists to divert or delay personnel from their intended utilization. The communications zone is involved in an important logistical support mission and is not, therefore, always able to focus primary control on all replacement facilities. The expanded mission of retraining within the theater and the control of in-theater casualties, hospital returnees, and rotational personnel increases the scope of this replacement support mission. A command with the single mission of controlling replacements should be able to perform the task more efficiently than an agency which has already been assigned a tremendous logistical mission. This also eliminates the abuse of the using agency diverting personnel from the replacement stream.

Replacements should not be considered a "supply item." Replacements are trained individuals who, in order that their skills may be utilized and in order to reduce non-effectives, must be moved quickly and efficiently through the replacement system. This can best be accomplished by a separate command with but a single mission. Manpower is too precious a commodity to

merit anything short of the most efficient control possible.

From a communications zone viewpoint, it is undoubtedly preferable to exercise command control of the installations within the respective area. However, the normal support of supply, transportation, and hospitalization required for replacement depots is normal and constant, and is, therefore, no great problem even though the replacement installations are not under the command control of the communications zone.

The theater army headquarters can best direct the distribution of replacements through a theater army replacement command when the TARC is located within the immediate vicinity. On the other hand, the communications zone headquarters is not normally as favorably located with respect to theater headquarters because of the necessity of locating its headquarters with respect to control of logistical operations.

We must not be misled, however, by the replacement organization and procedures supplying present Korean operations. The Japan Logistical Command controls the replacement system up to the combat zone in Korea. The number of troops involved, the peculiar status of Japan in this conflict, and the presence of one operating field army headquarters make this arrangement economical and practical. The small scale of these operations permits a tight control by the theater army headquarters. This application of a logistical headquarters controlling replacements in addition to performing logistical functions must not be applied to a full-scale war involving large forces over a large area.

Present Department of the Army policy governing the oversea replacement system, as outlined in Field Manual 101-1, *Staff Officers' Field Manual*, *The G1 Manual*, is considered to have eliminated most of the apparent shortcomings of the World War II system and, if effectively implemented, will prevent many of the abuses which de-

veloped in replacement operations during World War II. This system establishes a theater replacement command of coequal status to the communications zone and army group, which exercises command control of all replacement facilities (except replacement depots assigned to field armies in the combat zone).

In visualizing the control exercised by the TARCs, we must bear in mind that there are several categories of personnel involved other than replacements from the Zone of Interior to combat areas. Hospital returnees, not qualified for combat duty, will require conversion training prior to assignment to service type units. Similarly, excess service type personnel may require conversion training to qualify them for assignment to combat units. Whether or not rotation personnel are processed through separate depots, the replacement command is the agency best suited to assume this workload.

Diversion of Replacements

Loss of replacements from the replacement stream was a major criticism of both the continental and oversea replacement procedures in World War II. This is another strong argument for a centralized control of distribution by one agency at the Department of the Army and theater headquarters. Accurate accounting must be maintained to show where the replacements are, how long they have been there, and the reason why directed allocations have not been complied with.

The Department of the Army must apply experience data, not only on projected casualties but also to expected nonbattle and administrative losses of all categories, to include expansion of continental requirements. The technical services and subordinate commands must be precluded from allocating their products—as it is only human nature for them to visualize their own requirements as paramount. On the other hand, the G1, Department of the

Army, has the world-wide aspect of all personnel requirements and can control distribution based on the over-all picture.

The initial criticisms of oversea replacement procedures were the temporary diverting of replacements by base sections for labor pools, the selecting of the cream of the replacements for base section assignments, and the assigning of replacements to temporary table of distribution units in excess of authorized bulk allotments. These were undoubtedly valid in view of the situation confronting these commanders at the time, however, the result was a shortage of qualified personnel in combat units for which they were intended.

The theater army replacement command may not eliminate these diversions completely, but it will make them more difficult. The base commands then cannot arbitrarily proselyte replacement personnel, but must secure personnel by allocations.

Requirements

The preceding discussion has criticized the World War II replacement system, acknowledging that had its creators visualized eventual developments they too would have avoided them. A criticism of past errors is simple. Constructive improvement of this experience in the future is our goal if we are to avoid a repetition of these errors. There are some definite factors which must be realized in order to develop control of continental and oversea replacements.

The first of these is a realistic determination of requirements. These requirements involve two aspects: the number of replacements to be processed through the facilities and the personnel required to operate an efficient system.

Our initial starting point concerning loss replacement requirements, according to branch and military occupational speciality, is World War II experience, mod-

ified somewhat from our Korean experience. Inasmuch as it requires about 6 months to procure, train, and deliver a qualified replacement to a division engaged in combat, changes in requirements concerning number, branch, and military occupational speciality must be determined and acted upon quickly.

It requires time for the theater to compile this data for submission to the Department of the Army. Machine records units (MRUs), therefore, must be trained to compile this data expeditiously. There are many skeptics who question the value of MRUs, however, the fact remains that they are presently our best means of large-scale personnel accounting and we must exploit and develop their capabilities.

MRU computations must include expected losses through other than combat operations. These losses must be determined by experience factors. No replacement system will work effectively without the final product being geared to approach the needs of the using agencies.

Once the required product has been determined, the next step is to tailor the producing machinery to fit the output. World War II experience, modified by present training division and replacement training center activities, establishes a general yardstick for continental training overhead requirements. Unfortunately, we have not yet tailored the replacement depot requirements in oversea theaters to meet the numbers of replacements to be handled. Replacement depots with a T/O&E organization to administer from 3,200 to 4,800 replacements in World War II frequently controlled more than 10,000 replacements. Such overloading resulted in a loss of any individual identity, the crowding of billets, messes, and other facilities, and resulted in considerable delay and errors in assignment.

Once a T/O&E is established to handle the replacement requirement of the theater a sufficient number of depots must be

allocated the theater to handle this workload. Theater replacement command cannot be severely criticized for not being "personnel conscious" if the theater is allocated an insufficient number of replacement depots to carry the replacement load. Moreover, the requirements for retraining, hospital returnees, in-theater casualties, and rotation personnel must not be overlooked in computing the depot requirement.

Summary

1. The task of procuring, training, and distributing replacements is a major activity which may greatly influence success in war. The responsibility and control for this activity must be centralized and clearly defined.

2. A single agency at the general staff level in the Department of the Army must be responsible for the control of the input and the distribution of the output to and from training facilities. The G1 is the logical agency for this work with The Adjutant General as the operating agency. The G3, through OCAFF, will, of course, continue to establish training programs and objectives.

3. The control of continental training facilities (training centers and service schools) can best be accomplished by a centralized command directly under the Army Chief of Staff. This would establish a single command agency to co-ordinate and establish uniformity in all phases of training facilities.

4. Although the replacement system is not designed to effect general personnel economies, the system must be vitally concerned in all measures which diminish demands for personnel.

5. The organization and procedures for the replacement system must be so simple and so clear that those in positions of responsibility can never lose sight of the mission to be accomplished.

6. An effective replacement system depends upon:

a. Commanders at all echelons recognizing that personnel matters directly influence operations.

b. The Department of the Army having a "big stick" solely responsible for determining personnel requirements, feeding personnel into the training facilities to meet Army requirements, exercising departmental control of Zone of Interior replacements, and allocating the output.

c. A uniform and simple world-wide system of strength and status accounting by accurate and timely reports.

7. A theater replacement command should be established in each overseas theater for command control of all replacements outside the combat zone. This command should be directly under the theater army commander, coequal with the commanders of the communications zone and army group.

8. The present continental and overseas replacement organizations are tailored to meet present economies and restricted operations, and are not to be considered as the proper organization of a full-scale mobilization or major war.

Conclusion

The present system in the Zone of Interior is workable, however, great care must be exercised under this organization to prevent a recurrence of undesirable procedures of World War II in the event of a full-scale mobilization. If a separate command is not established to control all replacement personnel in the Zone of Interior, the Department of the Army must maintain rigid, effective control of the input and output in all training activities.

The implementation of the approved overseas replacement system as announced by the Department of the Army in FM 101-1 will establish the best control of replacement personnel in overseas theaters.

FRIEND OR FOE?

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ON 2 NOVEMBER 1944, the United States 28th Infantry Division launched an attack to seize the town of Schmidt dominating the Schwammenaul Dam on the Roer River. The seizure of this dam was important to the United States forces in order to prevent the flooding of the Roer River in the vicinity of Aachen.

The 112th Infantry Regiment, making the division main effort, seized its intermediate objective, Vossenack Ridge, within an hour after its attack was launched and seized Schmidt by 1430 the following day (see Figure 1). In spite of this immediate success, when the 28th Infantry Division was relieved 18 days later, it had suffered more than 5,500 casualties and had been forced to retire from Schmidt. An apparent success developed into one of the bloodiest and most costly division actions of World War II.

Contributing Factors

There were many contributing factors to this costly failure, however, weather and terrain were predominate among those factors. Adverse weather conditions resulted in air support being inadequate, both in close support and in isolating the battlefield. This permitted the enemy to move in reinforcements, and ultimately the 28th Division was opposed by three enemy divisions.

In addition, the division was unable to develop a narrow, winding woods trail into an adequate supply route, therefore, the troops that seized Schmidt could not be logistically supported. As a direct consequence of this logistical failure and the resulting shortage of ammunition,

when the enemy counterattack fell upon the defenders of Schmidt, the 28th Division was forced to withdraw, returning this dominant terrain to enemy control.

From a terrain standpoint, the intermediate objective, Vossenack Ridge, was dominated by the Brandenburg-Bergstein Ridge. Since the seizure of the Brandenburg-Bergstein Ridge was beyond the capability and mission of the 28th Division, its occupation by the Germans was accepted. Accordingly, with the fall of Schmidt, the Germans held dominating terrain to the south, east, and north of the 28th Division salient. The enemy's favorable position and the division's continued inability to develop an adequate supply route prevented the Americans from renewing a successful attack against Schmidt. The 28th Division, through tenacity and determination, continued to hold the Vossenack Ridge under murderous enemy artillery fire until it was relieved on 20 November by the 78th Infantry Division.

This new division did not succeed in seizing and holding Schmidt until February 1945. In reaching this objective the 78th Division employed an avenue of approach which was not dominated by enemy-controlled terrain (See Figure 1).

This example supports the military adage, "the terrain and the weather often have a decisive influence on military operations." Weather and terrain are not neutral—they are friends or foes depending upon how they are employed.

The purpose of a tactical study of the weather and terrain is to analyze and determine the effect of these factors on our own mission and on the capabilities

of the enemy. The collection, interpretation, and dissemination of information concerned with the weather and terrain are within the scope of military intelligence and are the responsibility of the G2. The intelligence officer must concern himself with the sources of information available, the preparation of studies based on this information, and the presentation to the commander of his conclusions concerning the tactical effect of the weather and terrain.

What sources can the division G2 look to in order to secure the desired information? Maps are the source usually available for studying the terrain, however, other sources can be exploited to supplement them. Aerial photographs are invaluable in discovering recent changes, particularly those which are man-made. In World War II, town plans and commercial road maps were of material assistance. Those who participated in the pursuit from Normandy to Belgium will recall the extensive use that was made of the Michelin Company's road maps—quite often, during that rapid advance, they were the only maps available in many units.

Soil surveys and geologic maps prepared by civil agencies, hydrographic charts, tourists handbooks, and flood control studies also can contribute valuable information.

Weatherwise, there are reports of gen-

and short-period forecasts. The extended-period forecast, covering a period of more than 48 hours, is used as the basis for planning immediate tactical operations. It contains the predicted temperatures, winds, cloud conditions, precipitation, fog and haze, and data as to the hours of sunrise, sunset, and moon phases.

A Tactical Study

From these sources, the G2 must fit the pieces together to provide an integrated picture for the commander. To assist the G2 in his task, a form entitled "Form for Tactical Study of the Weather and Terrain" has been devised (see Figure 2). This form serves two purposes: first, it provides the G2 with a checklist that presents the pertinent factors in a logical order to support sound conclusions and, second, it offers the G2 an orderly outline for the presentation of his study to the commander. Other staff officers will be involved in the preparation of this study, but it is the primary staff responsibility of the G2 to integrate their contributions and present the completed study to the commander. The study may be oral or written, depending upon the circumstances and the desires of the commander.

Since the commander's aim is to exploit the weather and terrain to his advantage and to the enemy's disadvantage, the need for a thorough study cannot be over-

Weather and terrain are vital considerations which may influence the final outcome of military operations. They may be useful friends or formidable foes depending upon how they are evaluated and employed

eral climatological conditions to be found in the various regions of the world. These can point out the "normal" or "average" conditions to be expected. For the tactical study, they must be supplemented by a study of the weather reports of the past few years and by extended-period

emphasized. Does the present form facilitate presenting the commander with logical conclusions?

Paragraph 1 of the study is entitled the "Purpose and Other Limiting Considerations." The commander's interest lies in determining the effect of the weather

and terrain upon his mission. Therefore, the paragraph might read: "The purpose of this study is to determine the effect of the weather and terrain on our landing at Salerno and the establishment of a beach-head within our zone." (See Figure 2.)

Paragraph 2 is the "General Descrip-



FIGURE 1.

tion of the Area." It consists of facts and is the basis for the succeeding paragraphs of the study. It contains information, not intelligence. We consider the weather information first because it influences the operation primarily through its influence upon the terrain. Paragraph 2a consists of pertinent extracts from, or the entire weather forecast as received from the weather detachment. Of particular interest to the commander are the light data and the modifications on visibility imposed by weather conditions. Light data are expressed in terms of civil, nautical, and astronomical twilight. These twilight periods are defined with reference to the sun's position below the horizon (see Figure 3). Nautical twilight provides sufficient light for the conduct of

military operations unless other weather conditions such as fog, snow, or rain prevail.

Paragraph 2b, "topography," contains four subparagraphs: relief and drainage systems, vegetation, surface materials, and cultural features. In preparing Paragraph 2b(1), one of the effective methods of describing relief and drainage is through the use of a ridge-lined and stream-lined map. A more detailed but still more effective method is layer-contouring.

By using colors ranging from yellow through orange, red, and brown, to cover successive elevations, a realistic three dimensional effect is achieved. Care should be taken to ensure that the colors are not so heavy as to obliterate any map symbols. Drawing inks, diluted with water and applied with a brush, are very satisfactory. An additional aid in studying relief and drainage is the plastic relief map which is produced in three dimensions. A terrain model is a superior aid but cost and time preclude its extensive use.

Details of the vegetation in Paragraph 2b(2) depict the location and shape of each forest, whether the trees are deciduous or coniferous, tall or short, how close they are together, and their average size, as well as the shape and location of the cultivated fields, whether or not they have been freshly plowed, and the type and degree of growth of the crops planted in them. Much about concealment and obstacles will be disclosed in this subparagraph.

In order to determine soil trafficability, the composition of the various soils must be examined. Usually, this information is presented on a soil trafficability map. The preparation of this map is the responsibility of the Corps of Engineers. The types of soil are described as to texture, the type of vehicles they can take, and the effect of dry or wet weather upon this trafficability.

FORM FOR TACTICAL STUDY OF THE WEATHER AND TERRAIN

55

(Classification)

Issuing headquarters
Place of issue
Date and time

1. PURPOSE AND OTHER LIMITING CONSIDERATIONS.

Consider the purpose for which the study is being made and such other factors as serve to limit the area to be studied or aspects thereof. These factors may include, according to circumstances, the mission, the enemy capabilities, and the commander's decision.

2. GENERAL DESCRIPTION OF THE AREA.

- a. *Climatic or weather conditions.* Depending on the time interval between the preparation of the study and the proposed use of the area, describe existing or predicted meteorological conditions to include precipitation, temperature, fog, cloud conditions, moon phases, wind, sunrise, sunset, and, when appropriate, magnetic phenomena.
- b. *Topography.* Use specially prepared and colored maps or overlays and photographs to illustrate each of the following characteristics, and the effect of predicted weather conditions upon them.
 - (1) *Relief and drainage systems.* Illustrate by layer-contouring, ridge-lining, hill-topping, or relief-shading the configuration of the ground, including slopes of hillsides, cliffs, bluffs, or critical slopes for personnel and vehicles; and by solid or broken lines and conventional symbols the configuration and condition of streams, including depth, slope, and condition of banks and bottom, as well as the location of crossing sites.
 - (2) *Vegetation.* Indicate the location of woods, including types of trees, diameter of trunks, density of planting, and existence of undergrowth, as well as the types of vegetation in nonwooded areas, whether natural or cultivated.
 - (3) *Surface materials.* Indicate the type and distribution of soils and subsoils in the area and determine the soil trafficability.
 - (4) *Cultural features.* Describe or illustrate the man-made changes in the topography, including roads, railroads, bridges, tunnels, towns, industrial areas, and fortifications.

3. MILITARY ASPECTS OF THE AREA.

From a consideration of the weather and the topography determine the following factors:

- a. *Critical terrain features.* Consider any terrain features that appear to be critical for either combatant, such as a dominating hill or ridge, the shoulders of a defile, a highway, a built-up area, or a communications center.
- b. *Observation and fields of fire.* Indicate by map the influence of hills, vegetation, fog, night, snow, and precipitation.
- c. *Obstacles.* Consider natural and artificial obstacles, such as swamps, dense woods, rivers, unstable soil, mine fields, areas contaminated with chemical, biological, or radiological agents, and other man-made barriers.
- d. *Concealment and cover.* Consider the concealment afforded by woods, cultivated fields, fog, night, or snow-covered areas, as well as the cover provided by ditches and valleys.
- e. *Avenues of approach.* Consider the road and rail net, terrain corridors, cross compartments, and soil trafficability.

4. TACTICAL EFFECT OF THE WEATHER AND TERRAIN.

Summarize the effect of the weather and the topography of the area. Consider the principal critical terrain features and the avenues of approach to them, including such factors as suitability for night operations, the use of heavy armor, and special obstacles to be breached, under each of the following headings:

- a. Effect on enemy capabilities.
- b. Effect on courses of action required to accomplish our mission.

(Initiating staff officer)

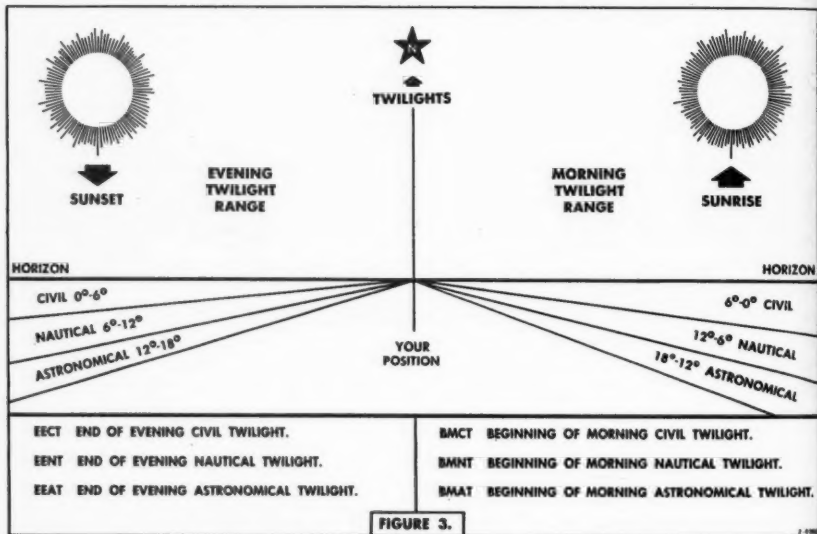
FIGURE 2.

Paragraph 2b(4), "cultural features," includes information concerning the man-made topographical changes. It includes such information as the width and condition of roads, the capabilities of bridges,

the analysis of critical terrain features and avenues of approach.

Critical Terrain Features

A critical terrain feature is any feature



the size and types of buildings in villages, the capacity of the railroads, and the construction details concerning military works within the area. The four subparagraphs of Paragraph 2b are best shown by maps or overlays. Graphical presentation of these items makes for clarity and ease of understanding, whereas a narration description can be confusing.

Paragraph 3 is entitled "Military Aspects of the Area." This paragraph contains intelligence. The information presented in Paragraph 2 is evaluated and interpreted under five military aspects: critical terrain features, observation and fields of fire, obstacles, concealment and cover, and avenues of approach. The two most important of these are critical terrain features and avenues of approach. The other three aspects contribute to

which affords a marked advantage to its possessor. For example, a dominant hill or ridge may constitute the key to the battlefield; a road or rail center may be of such importance that its seizure may cut enemy communications and greatly reduce his ability to resist; or a level clearing in rough terrain may provide the only accessible landing field for the support of an airborne operation.

Considerable judgment is required in the selection of critical terrain features. Factors to be considered when exercising this judgment are:

The mission.—The determination of critical terrain features is based upon the mission of the command. In Figure 1, the Brandenburg-Bergstein Ridge is a critical terrain feature for a force whose mission requires employing the axis of advance of the 28th Division, but it is not critical



Cover and concealment are two important aspects to be considered in any evaluation of terrain. Above, American infantrymen taking advantage of the cover afforded by a hedge-row during the World War II fighting in France. Below, United Nations troops utilizing the concealment of a wooded area near the front in Korea.—Department of Defense photos.



for a force employing the axis of advance of the 78th Division.

Type of action.—Critical terrain features vary between the offensive and the defensive. Generally, in the offense, critical terrain features forward of the line of contact are determined and may be as-



Pack supply is used over mountain terrain which precludes the use of motor transport.

signed as objectives. However, if the enemy has an attack capability, terrain within friendly territory, the seizure or retention of which by the enemy would prevent or hinder our attack, becomes critical terrain.

In the defense, the integrity of the battle position is paramount, and terrain features which must be held to maintain that integrity are critical. Usually such features fall within one or more of the following categories:

1. Dominating terrain which offers the best observation.
2. Terrain which permits the defender to cover the obstacles by fire.
3. Communication centers which affect command, communications, and the employment of reserves.

Echelon of command.—The determination of critical terrain features varies at different echelons of command. To an army commander, a large city may offer a "marked advantage" as a communications center and as a base for future op-

erations. However, to a division commander, the high ground which dominates the same city may be more important.

An obstacle also may be a critical terrain feature, but only under certain conditions. If an unfordable river in a jungle offers the only available route for the logistical support of a force, it is a critical terrain feature as well as an obstacle. It is a critical terrain feature because the attacker must seize and retain it to continue his advance. It is an obstacle because it impedes lateral movement and communications. On the other hand, an unfordable river perpendicular to the axis of advance, in terrain similar to that found in Western Europe, is an *obstacle*, but not a *critical terrain feature*. In this case, that which must be seized and retained to hold a marked advantage over the enemy is not the river itself, but the crossing sites and the high ground dominating them. The seizure and retention of these sites by the attacker destroys the effectiveness of the obstacle to the defender.

The G2 must keep in mind that, in determining critical terrain features, if he selects too many or too few he is not properly discharging his responsibility to his commander. He must employ his best judgment and be decisive and specific when determining the features that are critical.

Observation and Fields of Fire

Certain characteristics of the terrain are important with regard to observation and fields of fire. These permit us to see the enemy and bring him under effective fire. Generally, the highest elevation in the area offers the best observation. However, the configuration of the rest of the terrain, the weather conditions (fog, sleet, and rain), the cultural features, and the vegetation within the area also influence observation. Long fields of fire are provided by relatively level, open ground. The configuration of the terrain,



The weather has a decided effect upon such military considerations as observation, mobility, and trafficability. Above, infantrymen marching down a road to avoid the slow and laborious travel over snow-covered fields. Below, a motor column moving through mud and water during the allied advance in northern France.—Department of Defense photos.



the vegetation, and the cultural features existing within the area also may limit fields of fire.

Obstacles

Obstacles are those features of the area of operations which stop or delay military movements. They may be created by nature or by man. Obstacles influence not



Natural terrain obstacles slowing the advance of infantrymen near Bougainville.

only the determination of the avenues of approach to objectives, but also the time, formation, and equipment necessary to make an attack.

A study of the terrain will determine which woods are too thick to permit easy going; which slopes are too steep for military movements; which streams are unfordable or fordable with difficulty; where cuts or fills are located which will delay an advance; which areas lend themselves most readily to the construction of road blocks, mine fields, abatis, and anti-tank ditches; and the points from which these obstacles can best be covered by fire. Obstacles perpendicular to the ad-

vance favor the defender, whereas obstacles parallel to the advance may favor the attacker by offering him flank protection.

Concealment and Cover

Concealment and cover are the antithesis of observation and fields of fire. A study of the configuration of the terrain, the vegetation, and the cultural features is required to locate areas in which these are best provided. Concealment also can be provided by overcast weather and darkness.

Avenues of Approach

Avenues of approach are determined by considering the road and rail net, terrain corridors, cross compartments, and soil trafficability. Terrain corridors and cross compartments will have a great influence on the selection of avenues of approach. An advance through cross compartments is undesirable because the successive ridges and valleys make movement difficult. A corridor approach, when the military crests are controlled by friendly forces, offers cover and concealment. A ridge approach provides for control of observation, but may offer little cover and concealment.

It should be noted that the other military aspects in Paragraph 3 will have a strong influence in determining the avenues of approach. This is not made clear in the form shown in Figure 3, but is inherent in the problem. The term avenue of approach connotes ease in reaching the objective, but ease is just a part of the problem. Such factors as cover and concealment, observation, and fields of fire, quite often may be the paramount considerations. For clarity, it would improve the form if the descriptive text of Paragraph 3e were changed to read: "Consider the road and rail net, terrain corridors, cross compartments, and soil trafficability in light of the military aspects of the area listed above." The



A critical terrain feature is any feature which affords a marked advantage to its possessor. Above, two American infantrymen in Korea occupying a position which affords excellent observation and fields of fire. Below, infantrymen racing against time in constructing a bridge during the flood season in northern France.—Department of Defense photos.



weight given to these factors will require the best judgment of which the G2 is capable.

Summary and Effect

Paragraph 4 is the summary of the study. In this paragraph, conclusions are drawn as to the tactical effect of the weather and the terrain on enemy capabilities and upon our mission.

First, the effect on enemy capabilities is considered. What effect will the terrain have on the enemy's defense capability? Where are logical defensive or delaying positions for the enemy? Which is his best defensive position? What effect will the weather have on the enemy's observation of avenues of approach into his position? Where does the terrain most favor the enemy's counterattack capability? What effect will the terrain have upon his attack capability? What are his best avenues of approach into our position? What effect will the weather have on his attack capability? Does the wind favor his use of smoke or chemicals? Will soil trafficability impede his ability to mount and sustain an attack?

Finally, the effect of the terrain and weather upon our courses of action is considered. What are the best avenues of approach to our objective? What are the best avenues of approach into the logical defensive and delaying positions available to the enemy? Will the wind favor our use of smoke? How much concealment is offered us by the weather and the terrain? Will the weather and the soil permit good cross-country mobility? What ob-

stacles must be breached? What obstacles afford us flank protection? Will extremes of temperature affect the combat efficiency of our troops? Do combat and supply vehicles need special care because of weather conditions? Will our air support be able to operate in the weather predicted? The end result of a tactical study of the weather and terrain is the determination of the critical terrain features of the area, the suitable avenues of approach to them under predicted weather conditions, and the overall effect of weather on operations.

Conclusions

The present form for the tactical study of the weather and terrain facilitates presenting the commander with logical conclusions concerning the impact of the weather and terrain upon the enemy's capabilities and upon our possible courses of action. However, it is merely a device to assist the initiating officer in this presentation and there is no guarantee that the conclusions drawn will be correct. The validity of the conclusions drawn will depend upon the judgment of the officer responsible for the study. While the G2 is responsible for the study, he should look to the other members of the staff to assist him by contributing to the study in their respective fields. The commander and his staff must realize that if the weather and terrain are correctly analyzed and used wisely they will be valuable friends; if they are incorrectly analyzed or used unwisely they may be formidable foes.

Never before in history has it been so important that the soldier have a broad understanding of the relationships between all the factors that make up our national security.

General J. Lawton Collins

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MILITARY NOTES AROUND THE WORLD

UNITED STATES

Power Goal

The Government's goal for the expansion of electric generation capacity recently was raised by 10 million kilowatts.

The new aim set by the National Production Authority is 117 million kilowatts of electric power available by 31 December 1956. The previous goal of 107 million kilowatts was set last March.—News release.

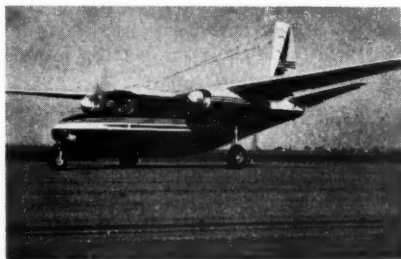
Fighter Auto-Pilot

Navy fighter pilots soon may be able to devote more attention to navigation and gunnery as a result of a new automatic pilot. This device was developed under the sponsorship and to the specifications of the Bureau of Aeronautics for use in fighter aircraft.

The auto-pilot will hold a plane within a half degree of its course and will maintain the plane at the desired barometric altitude within a 25-foot tolerance at 10,000 feet. It will stabilize an airplane about its roll, pitch, and yaw axes, and will level off the plane from a climb or bank. Gyroscopes and a compass feed electric signals into an amplifier. This, in turn, operates control surfaces to provide proper flight. Even though the auto-pilot may be in operation, the pilot can maneuver his aircraft by means of a miniature control stick.—*All Hands*.

Personnel Transport

The United States Air Force has ordered three Aero Commander twin-engine personnel transports for service tests. The Commander, under the designation L-26,



The twin-engine Aero Commander.

will compete with the L-23 Twin Bonanza already under evaluation. The Commander has a wing span of 43 feet 10 inches, a length of 34 feet 5 inches, a maximum speed of 211 miles an hour, and a cruising speed of 197 miles an hour.—News release.

Civilian Pilots

The United States leads the world in the number of civilian pilots, with more than half a million aircraft operators licensed. Italy is in second place, with Switzerland, Denmark, the Netherlands, and Great Britain the runners-up.—*Air Force*.

Census Report

The Bureau of the Census recently reported an estimated United States population, including armed forces overseas, of 157,015,000 as of 1 July. This is an increase of 5,830,000, or 3.9 percent, over the total in the 1950 census.—*The New York Times*.

Army Training

Professional and scientific men called in the draft are being given only half the normal basic infantry training in order to take full advantage of their special skills.

Under a new regulation, college-trained draftees in 25 specialized fields, ranging from astronomy to zoology, are required to take only 8 weeks of basic training instead of the customary 16.

The regulation also formally establishes and revises the procedures for identifying and classifying such specialists to make sure none of their skills will be lost to the Army.—News release.

Accident Rate

The Air Force recently reported a new low major accident rate of 29 for every 100,000 hours flown during the first 6 months of this year.

This rate was a 9 percent decline from the preceding 6-month period. It continued a general downward trend in major accident rates since the postwar high of 61 in 1946.—News release.

Giant Locomotives

Two of the Army's new giant locomotives, known as "military road switchers," are en route to the Far East for service on United States Army-operated railroads. Each engine weighs 100 tons. They have a top speed of 77 miles an hour, and are powered by 16-cylinder, 1,600-horsepower diesel engines which can operate in temperatures ranging from 40 degrees below zero to 125 degrees above zero Fahrenheit.—*Armed Force*.

Helicopters Ordered

The Defense Department has ordered five new-type helicopters equipped with two ram-jet engines.

The two-seat craft, named Hiller *Hornets*, will be shared by the Army, Navy, and Marine Corps (MILITARY REVIEW, Jun 1952, p 64).

Weighing about 360 pounds empty, the *Hornet* will carry a load of 600 pounds and have a maximum forward speed of 80 miles an hour.

The jet engines weigh only 12 pounds each and together develop about 70 horsepower.—*The New York Times*.

Body Armor

The Army announced recently that it had ordered 25,000 suits of body armor of the type now used by the Marine Corps.

Both the Army and the Marines have tested their different kinds of armor in Korea. Both have been reported to be effective in preventing wounds from mortar shells, hand grenades, and other low-velocity missiles and fragments.

The Army said that it had arranged to get the armor suits through the Marine Corps because that type, made of rigid fiberglass plates curved to fit the body, had been in production on a volume basis since October 1951.—News release.

Radar-Television Combination

Television now aids control men at airports who spot all planes in the air by radar and direct their movements by radio. The television gives a brilliant display of whatever is on the radar screen and, unlike the radar screen, gives a picture that can be viewed in comfort in daylight. This also makes it unnecessary to house the radar scope under hoods or tents to exclude outside light.

The display can be given on as many television scopes as may be needed. In addition, signals show up on the television screens that cannot be seen on the radar screen.—*Science News Letter*.

Shift Aircraft Duties

The Army recently shifted responsibility for the procurement, supply, and maintenance of all Army aircraft from the Ordnance Corps to the Transportation Corps.

The Army now has about 1,700 conventional and helicopter aircraft. Transportation helicopter companies recently were set up as standard units within the Transportation Corps.—News release.

Army Bridges

Aluminum and steel bridges that are more substantial and can be set up faster and easier than those of World War II are being developed by the Army Corps of Engineers. Both floating and fixed bridges, now in the test stage of development, are capable of supporting motor vehicles or weapons of the modern Army.

The Army is testing an aluminum bridge for light tactical use and for use as a foot bridge. Both aluminum and steel bridges, capable of supporting army- and division-weight loads, are getting a final going over.

The Bailey bridge of World War II, capable of carrying an entire division, is expected to be replaced by a divisional bridge now under study. The new bridge can be set up in substantially less time than that needed for the old Bailey bridge of comparable capacity. Over-all construction time has been reduced by making use of fewer and more easily connected parts.

The aluminum army-weight bridge is a larger version of the division bridge. It can carry the combat and supply loads of an entire field army over a wide range of distances. Like the division-size bridge, the army bridge is of fixed mounting design. It is put together in various ways, single or double roadways, utilizing single or multiple truss construction, depending upon the length of the span and the loads to be accommodated. This bridge is designed for fabrication in steel.—*All Hands*.

Metals-Salvage Program

A metals-salvage program put in effect by the Army Ordnance Corps has had these results in the last year and a half:

1. The Ordnance Corps has supplied more than three-quarters of its needs for brass and other nonferrous metals needed to make ammunition.

2. The current shortages of these metals have been alleviated and a dependable supply has been obtained for the ammunition program.

3. About 37 million dollars has been saved for the Government.—*The New York Times*.

Aerial Refueling

The development of an in-flight refueling method for carrier based aircraft has been announced by the Navy.

In-flight refueling for relatively short-range fighters will give considerable tactical advantages.

Long-range offensive missions, made up of carrier based attack and bomber aircraft, can be escorted all the way to and from target areas. Combat air patrols can be kept going for long periods, and armament loads can be increased if fighter aircraft carry minimum fuel at take-off.—News release.

Faster Camera

The Navy revealed recently that it had developed a smaller, faster camera for use in new high-speed jet photo planes not yet delivered to the fleet. The camera, designated CAX-12, weighs only 15 pounds and is about one-fourth the size of airplane cameras now used. Its dimensions have been trimmed to fit in the slim fuselage of future jet planes.

The CAX-12 is designed with high-speed film movements so photo pilots can speed in, get pictures of ground objectives, and roar out of anti-aircraft artillery range much more quickly than is possible with the slower cameras now in use.—News release.

War Veterans

The Veterans Administration figures that there were 19,288,000 living veterans of all wars and peacetime military service of the United States on 30 June.—News release.

Benzene Production

This country's oil industry is getting set to produce large amounts of benzene, an industrial chemical vital to the manufacture of hundreds of military and peacetime goods (MILITARY REVIEW, Jan 1952, p 63).

Until recently, benzene was obtained chiefly from the steel industry as a by-product of converting coal into coke. Output from that source was limited to around 165 million gallons a year.

Now the petroleum industry is planning to build plants which will turn out an equal amount of benzene.—News release.

Mobilization Camp

The Army has announced that the establishment of a railhead facility in the former cantonment and warehouse area of Camp White, near Medford, Oregon, will be started in the near future. The facility will be used only in the event of total mobilization.

Under present plans, basic utility systems, cross roads, spur rail lines, and communications systems will be rehabilitated or constructed.—*Armed Force*.

Civilian Aircraft Fleet

Of the 60,000 active aircraft in the United States civilian fleet, about 1,500 are the large multiengine aircraft owned by the commercial air lines. Of the others, mostly small planes, 18,000 are used directly in connection with a business or profession, and farmers or ranchers own 11,000 more. Many have joined the Government on forest fire patrol, mosquito abatement projects, fish and game law enforcement, and highway traffic control work.—*Air Force*.

High-Speed Aviation Tire

An aviation tire which can hit a runway at 250 miles an hour has been developed by an American rubber company.

This is the first tire of its size to meet the high-speed requirements recently established by the Air Force.—*The New York Times*.

Man-Made Gravity Device

A powerful machine capable of exerting a force 40 times greater than the gravitational pull of the earth has been developed by Navy scientists for testing human tolerance to high speeds of acceleration.

The "human centrifuge" simulates the extreme gravitational conditions encountered by pilots flying sonic-speed aircraft. It can accelerate from a dead stop to 173 miles an hour in less than 7 seconds.

The centrifuge is powered by a 180-ton motor that has a rating of 4,000 horsepower and can develop 16,000 horsepower within seconds. A spheroidal aluminum gondola is suspended in double gimbals that are rotated by motors mounted in an arm. A man seated in the gondola can be somersaulted or tipped into any position while being swept around in giant circles by the arm.

Since the "guinea pig" is visible to researchers only while the centrifuge is motionless, high-speed television, X-ray, and motion picture cameras are mounted in the gondola to record the reaction of the "pilot" to the conditions produced.—*Armed Force*.

Pilot Training

The Air Force has expanded its pilot training to include 10,000 men annually under a new program. The previous program called for 7,500 newly trained pilots a year. Under the new program, all pre-flight training is centralized at Lackland Air Force Base, San Antonio, Texas. Ten other Air Force bases, previously used for such training, now handle only actual flying training.—News release.

Jet Bomber

The Air Force announced recently that it had ordered the eight-jet *B-52* heavy bomber into full-scale production and had abandoned all plans to order any *B-60*s.

Both planes are huge swept-wing jets designed to replace the *B-36*, the largest bomber now in service. The *B-36* is powered by six pusher propellers and four jet engines, and has an announced combat range of 10,000 miles.

The *B-60* is described as a modernized, swept-wing version of the *B-36*, while the *B-52* is termed a new model designed from the ground up.

Performance data on the *B-52* are secret. It has a 185-foot wing span and a length of 153 feet. Its tail towers 48 feet—nearly five stories—from the ground.—News release.

High-Speed Photography

High-speed motion picture cameras, greedily devouring film at the rate of 3,500 frames each minute, are helping scientists learn more about what goes on in blast furnaces.

Small, built-in peep-holes allow steelworkers to peer inside the furnace and to observe the fiery mass of coke and molten metal. However, forced-air drafts shoot sparks throughout the furnace so rapidly that it is difficult for the eye to follow them. High-speed movies "slow down" the sparks, helping researchers to study draft patterns.

The size of coke particles being shoved into the furnace has a direct relationship to the operation of the furnace. The super-slow-motion movies have permitted studies of these particles. Sometimes the furnace may be as hot as 3,400 degrees Fahrenheit, and the brilliance of the luminous coke keeps observers from seeing it clearly.

By photographing the coke lumps and then projecting the films on a suitable viewer, it is possible to measure the lumps to obtain needed data.—*Science News Letter*.

Korean Duty

A total of 2,116 American infantrymen in Europe have volunteered since January for duty in Korea. About 1,900 of the applications have been approved, and only 67 disapproved. Most of the remaining applications now are being processed.—News release.

Basic Training

Some future draftees are slated to get their 16 weeks of basic training in certain combat-strength divisions in this country, rather than in training centers, according to a recent Army announcement.

An expected peak load of training during the coming months would otherwise swamp present training facilities if certain units were not given the additional duty of training some of the new men. Men trained by these units will be assigned, after training, in the same manner as if they had received their initial assignment to a training center.—*Armed Force*.

Rockets for Scorpion

The Air Force's new *F-89D Scorpion* interceptor will be armed with air-to-air rockets instead of the 20-mm cannon used on earlier versions of the plane.

The new armament is coupled with electronic equipment designed to enable the pilot to find and direct his fire at an enemy aircraft in all kinds of weather and at night.—*Army Navy Air Force Journal*.

Construction Project

Construction of two regimental areas is underway at Fort Lewis, Washington. The project, which is expected to cost approximately 12½ million dollars, is slated for completion in May 1953.

The two areas will house a total of 6,240 men when completed, and will be composed of permanent, noncombustible-type material. The project is part of the postwar plan to enlarge Fort Lewis. It includes thirty-five 165-man barracks and two 225-man barracks.—*Army Times*.

EASTERN GERMANY

Governmental Reorganization

Eastern Germany recently completed the first stage in a complete reorganization of its internal administration designed to bring all political units, down to the



village level, under tighter central control. The governments of the 5 traditional provinces of the Soviet zone have been dissolved into 14 districts, each bearing the name of its principal city. The Berlin area is not affected since it is under four-power rule.

The districts sprouted from former provinces as follows:

Mecklenburg—Rostock, Schwerin, and Neubrandenburg.

Brandenburg—Frankfurt, Cottbus, and Potsdam.

Thuringa—Erfurt, Gera, and Suhl.

Saxony—Leipzig, Dresden, and Chemnitz.

Saxony-Anhalt—Magdeburg and Halle.
—*The New York Times*.

KOREA

Agricultural Team

A United Nations team is in Korea to formulate a 5-year program of rehabilitation and development of the country's agricultural economy.—News release.

WESTERN GERMANY

Private Purchases

United States troops have changed more than 119 million dollars of their military script into marks for private purchases on the German market in the past year.—News release.

World War II Ship Losses

The German Navy lost 2,500 vessels in World War II, according to statistics published by the newspaper *Die Welt*.

The paper quoted the former chief of the German naval reconnaissance forces as calling this figure "reliable." No official statistics are available.

The losses included 4 battleships, 5 heavy and 4 light cruisers, 27 destroyers, 44 torpedo boats, and 946 U-boats, according to *Die Welt*.—News release.

Uranium Deposits

West German uranium deposits are probably large enough for industrial experiments as well as scientific research, according to a report by the German Institute for Economic Research. The main sources probably would be near Weissenstadt, in northern Bavaria, and near Wittichen, in the Black Forest, the report said.—News release.

ISRAEL

Extend Military Service

A 6-month increase in the period of military service recently was approved by the Israeli Parliament. Men of 18 to 26 will thus serve 30 months and those 27 to 29 will serve 2 years. Women are unaffected by the amendment; the period of service for unmarried girls of 18 to 26 will remain at 2 years.—*The New York Times*.

YUGOSLAVIA

Foreign Trade System

Yugoslavia has introduced a new system of foreign trade by remote control, abandoning the previous system, borrowed from the Soviet Union, of directing foreign trade through centralized government departments. The new system brings with it free dealings, within certain defined limits, in foreign exchange for nationalized enterprises, a novel departure for any Communist-run economy. The Yugoslavs believe this will ensure a more equitable distribution of foreign exchange resources than the previous system achieved.—News release.

TURKEY

Atlantic Pact Headquarters

Izmir has been chosen to become the site of the headquarters for the South-eastern Europe Command established under the North Atlantic Treaty Organization to include Turkey and Greece.

Izmir, an important Turkish port and communications center on the Aegean Sea, constitutes an ideal site on which to base measures for defense against possible submarine sorties from the Black Sea in the direction of the Mediterranean.—Turkish Information Office.

Military Preparedness

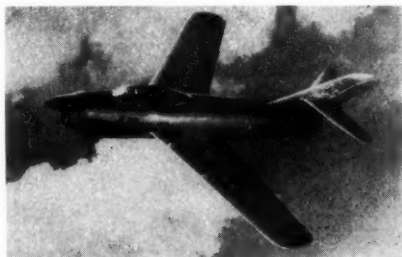
An agreement was signed in Ankara recently to release more than 35½ million dollars in counterpart funds for use by the Turkish armed forces. Counterpart funds are amounts deposited in Turkish liras by the Turkish Government to match American aid in dollars.

Concluded between the Turkish General Staff and the Mutual Security Agency's mission in Turkey, the agreement is based on the fact that these funds will be spent to further Turkey's military preparedness, a vital link in the military and economic co-operation of Turkey and the United States with the other free nations of Europe.—Turkish Information Office.

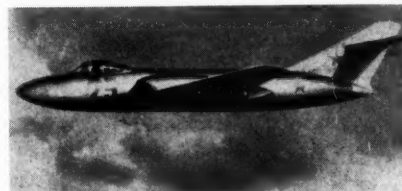
USSR

New Jet Fighters

The Soviet Air Force is testing two new fighters of particular interest in view of the military "postures" developing in Europe these days. One is the two-seat radar-nosed *MiG-15F*, the other a



Above, the two-seat, all-weather *MiG-15F*. Below, the twin-jet ground-attack fighter.



twin-jet fighter of Mikoyan design, both observed in Eastern Germany.

The *MiG-15F* all-weather and night fighter appears to be armed with heavy-caliber cannon, two of which are installed under the nose. The protruding barrels have enlarged muzzles, possibly equipped with recoil dampeners. This armament indicates that the Soviets intend it to search out and attack large heavy bombers.

The twin-jet fighter fills a gap in the Soviet ground-attack forces in that it provides a jet attack plane in the same category of the famous *Stormovik* in World War II. The absence of this type of aircraft has been somewhat puzzling in view of the Soviets' known predilection to strong ground-attack tactics in support of the Army.—*Aviation Age* release and photos.

GREAT BRITAIN

New Delta-Wing Jet

The latest British delta-wing aircraft to be released from secrecy is the Boulton Paul *P.120*, now undergoing flight trials. Like the *P.111* (MILITARY REVIEW, Mar 1951, p 69), the *P.120* has been built for



The *P.120* delta-wing research plane.

aerodynamic research at near-sonic speeds. However, it differs from the *P.111* in that it is fitted with a tailplane, which is adjustable for trimming at various speeds.

The *P.120* has a wing span of 33 feet 5½ inches, and a length of 29 feet 7½ inches. It is powered by a *Nene* jet engine. No other data have been released.—News release.

NORWAY

Arctic Ocean Range

The Arctic Ocean, always presumed to be one deep sea, is in fact made up of two deep seas or basins, divided by a chain of submerged mountains, with peaks up to 6,700 feet high, according to hydrographic research by the Norwegian ship *G.O. Sars*.

The underwater mountain chain, giving the arctic sea bed the contours of an Alpine landscape, stretches from Spitsbergen to Jan Mayen Island, with Jan Mayen Island the highest "peak."

Echo soundings show depths of 12,700 feet on the eastern side of the sea-bed mountain range, which also separates the warm and cold currents in the sea.—News release.

AUSTRALIA

Citizen Military Forces

New Citizen Military Forces units approximating another division, with supporting army, corps, and administration troops, will be raised by the end of 1953, according to an announcement by the Minister for the Army.—*Australian Defence and Services Newsletter*.

Korean Service

Selected officers of the Citizen Military Forces are to be given an opportunity to visit Korea to further their training preparation while attached as observers to the Australian forces serving with the British Commonwealth Division.

Citizen Military Forces officers will have an opportunity to study the present campaign and the methods of warfare employed by the United Nations forces.

The tour of duty as observers will be approximately 3 weeks.—*Australian Defence and Services Newsletter*.

Runway at Cocos Island

A Royal Australian Air Force construction group recently finished a new 10,000-foot runway and other airport facilities at Cocos Island, in the Indian Ocean (MILITARY REVIEW, Apr 1952, p 70).

The runway will be used for air service between Sydney, Australia, and Johannesburg, South Africa.—News release.

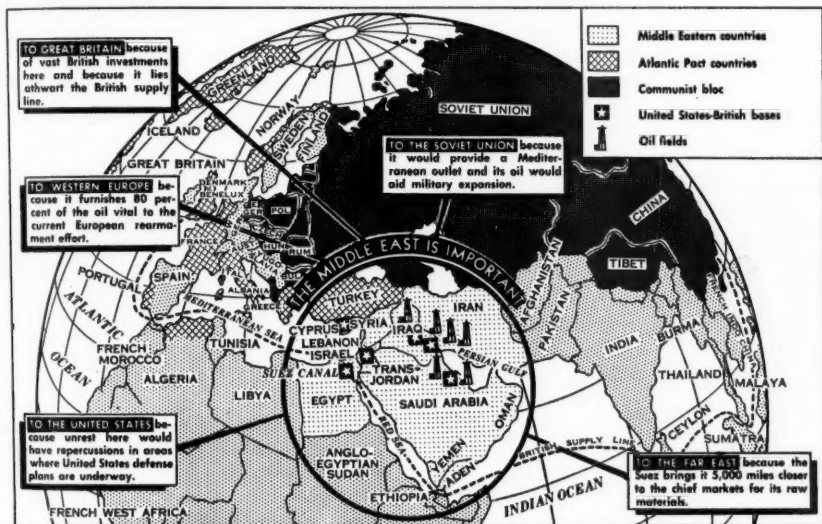
Torpedo Tested

The first 21-inch diameter standard surface-ship torpedo made in Australia recently was tested at Pittwater Range, New South Wales.

The Royal Australian Navy made 18-inch torpedoes for aircraft of Royal Navy carriers and the Royal Australian Air Force during World War II, but it depended upon the Royal Navy for 21-inch torpedoes for its surface ships. Now it will provide its own requirements.—*Australian Defence and Services Newsletter*.

MIDDLE EAST

Why the Middle East Is Important to the Rest of the World



ALASKA

Uranium Deposit

The Geological Survey recently announced the discovery of a uranium deposit on the Seward Peninsula in Alaska, only 61 miles from Soviet Siberia.

The Seward deposit was found at Brooks Mountain, 25 miles from the most westerly point on Seward Peninsula. The peninsula is separated from Soviet territory by the Bering Strait, which is 36 miles wide.—News release.

Air National Guard Unit

Alaska has been authorized its first Air National Guard unit with the organization of a fighter-bomber squadron and supporting units.

The effective date for activation of the new combat unit is 1 July 1953. The squadron, which will gain Federal recognition as part of the National Guard of the United States, will be located and trained at Anchorage.—News release.

DENMARK

Export Increase

Danish dollar exports for the first 6 months of this year totaled \$14,630,000 compared with \$9,800,000 for the same period in 1951.—News release.

Defense Budget

Denmark will spend twice as much money for national defense next year as she is doing this year. The increase is caused by North Atlantic Treaty Organization obligations. The 1953-54 defense budget adds up to the equivalent of 145 million dollars.—*The New York Times*.

AUSTRIA

Population Figure

Austria's population now numbers 6,611,307, according to a report by the Central Bureau of Statistics. This figure includes 322,000 foreigners, 200,000 persons of undefined nationality, and 50,000 stateless persons.—News release.

IRELAND

Gustaf Submachine Gun

The Gustaf submachine gun, which will shortly be on general issue throughout the Army, is a small, compact weapon of light weight and sound construction. It is of Swedish manufacture.

Magazine fed and operated on the heavy bolt-blow back system, the gun can be



The Gustaf submachine gun.

fired in any position. The box magazine holds 36 rounds of 9-mm ammunition. The action is fully automatic only, but single shots can be fired by quick release of the trigger. Muzzle velocity is 1,300 feet a second. The rear sight is of the flap type and is adjustable for ranges of 100, 200, and 300 yards. The front sight can be adjusted by a key to correct for lateral and vertical errors.

Additional data on the weapon are: weight, 8 pounds; length, with buttstock extended, 32 inches; length, with buttstock folded, 22 inches; and cyclic rate of fire, 600 rounds a minute.—*An Cosantóir*, Ireland.

COLOMBIA

Trade Pact

Arrangements have been made for the exportation of 1,000 tons of rice and a considerable amount of leather and hides to Western Germany under a trade agreement between Colombia and that country.

—*The New York Times*.

COMMUNIST CHINA

Industry and Commerce Control

Regulations for the establishment of the projected All-China Federation of Industry and Commerce have been released by Peking. This body is organized to fit all types of urban economic enterprises into a tighter mold for more efficient Government planning and control.

The four "basic tasks" of the organization are listed as follows:

1. To lead industrialists and other businessmen in observing Government laws and policies.
2. To direct them in developing production and improving their efficiency "under the general economic planning of the state."
3. To represent them in passing on their views to the Government and in consulting with trade unions on questions of labor-capital relations.
4. To organize them for "pursuit of studies, remodeling of ideology, and participation in various patriotic movements."

The charter sets up three organizational tiers at the local, provincial, and national levels.—*The New York Times*.

CANADA

Jet Trainers

The United States Air Force has lent a number of T-33 jet trainers to Canada to train jet flight instructors. The planes, two-seat versions of the F-80 Shooting Star, will be used to supplement Royal Canadian Air Force equipment until Canadian production of T-33s begins under a United States license.—News release.

FOREIGN MILITARY DIGESTS

Military Lessons of the Korean Conflict

Digested by the MILITARY REVIEW from an article by Brigadier B. S. Bhagat in
"The Journal of the United Service Institution of India" January-April 1952.

THE Korean conflict has brought out no new military lessons as such, but it has highlighted and emphasized some of the lessons which were drawn from World War II. In order to obtain a comprehensive picture of these lessons, it is necessary first to examine the background on which the picture has been painted and the technique employed; that is, the terrain of Korea and the operations that have taken place.

TERRAIN OF KOREA

Korea is a comparatively small, narrow, and mountainous peninsula, some 430 miles long and 200 miles wide. Communications, both by road and rail, are generally poor, and cross-country movement by vehicles, both tracked and wheeled, is difficult. The climate during the winter months—October to March—is very severe, approaching arctic conditions. There are only a few large towns as judged by present-day European standards, and the number of all-weather airfields is extremely limited. It is thus easy to see that the country is not suited to the movement of large modern armies.

SUMMARY OF OPERATIONS

The military operations in Korea can be divided into four distinct phases:

Phase 1 started with the sudden North Korean invasion of South Korea and the decision of the United Nations to send armed forces to repel the invaders. During this phase, the American forces and the remnants of the South Korean Army were pushed back to the southeasterly tip of the peninsula, around the port of Pusan. Here, they managed to hold out until they were reinforced.

Phase 2 began with the United Nations forces assuming the offensive. The successful and efficient combined operation at Inchon was launched soon after the start of this offensive. The United Nations forces crossed the 38th Parallel—the international boundary between North and South Korea—and pushed the North Koreans back to the Manchurian border. By the end of this phase, the North Korean Army as such was completely destroyed.

Phase 3 saw the armies of Communist China enter the conflict. This introduced an entirely new note into the struggle,

and one which the United Nations forces had neither anticipated nor provided for in their plans. Opposed by numerically superior forces and faced with climatic conditions that made air support all but impossible, the United Nations forces had to fall back south of the 38th Parallel. They succeeded, however, in stabilizing the situation approximately along the line of the 37th Parallel. Here, they reorganized and with fresh reinforcements began making plans for resuming the offensive.

Phase 4 commenced with the initiative again being wrested by the United Nations forces and the start of a new offensive. This gained rapid momentum and the line of the 38th Parallel was soon regained. Then came a temporary lull in operations while much political discussion was taking place in United Nations circles as to the advisability of crossing this line again. This step was taken and the United Nations forces subsequently stabilized their line north of the 38th Parallel. Phase 4 is thus still in progress and the end is not yet in sight. In fact, in the existing circumstances, it is difficult to visualize a purely military conclusion of the Korean conflict. The end must inevitably be a political agreement.

LESSONS OF THE CONFLICT

With the terrain of Korea and the course of the operations as a background, it is now possible to consider objectively the lessons that have emerged. These can be conveniently grouped under the following headings:

1. Strategic and political lessons.
2. Tactical lessons.
3. Organizational, training, and equipment lessons.

Strategic and Political Lessons *Political Influence on Strategy*

A major lesson of the conflict, and one which has been brought out very forcibly in numerous campaigns in the past, is the overriding consideration of political ex-

pediency over military strategy. In the Korean conflict, it was clear that the main supply and concentration centers of the North Korean Army and its connecting lines of communication were located north of the Manchurian border. However, political considerations prevented the United Nations air forces from taking any action north of this boundary. This provided the Communists with a "sanctuary," and the United Nations forces could not derive the fullest advantage from their possession of air superiority. They were thus hampered in the efficient conduct of operations. Other manifestations of such restrictions during this conflict were the questions of the crossing of the 38th Parallel by the United Nations forces during Phases 2 and 4 of the campaign, and the bombing of the vital bridges over the Yalu River. In both cases, political considerations had to be weighed very carefully at the United Nations Organization at Lake Success before permission could be given. Such restrictions, necessitated by political considerations, will frequently have to be accepted in war, and, hence, allowance must be made for them in all military operational planning.

Strategic Intelligence

The value of accurate and timely strategic intelligence was another important lesson of the conflict. The retreat of the United Nations forces in Phase 3 can be attributed to their not possessing a good enough intelligence organization to give them ample warning of the intentions of Communist China to enter the scene of conflict and of the concentration by her of considerable forces just north of the Korean-Manchurian border. It may be argued that the political ban placed on the United Nations air forces from operating north of the border was responsible for this lack of information. This, of course, is true, but it is felt that in spite of this ban a good intelligence

organization would almost certainly have been able to forecast such a development, especially when the movements of such large bodies of troops were involved.

Limitations of Air Forces

The limitations of an air force with regard to its capacity to stop all movement in a theater of operations, even though it possesses complete air superiority, was another lesson which was emphasized in this conflict. The United Nations air forces could never entirely stop the movement of the opposing land forces in spite of having what was tantamount to complete air superiority. The North Koreans and the Chinese Communists, taking advantage of weather conditions, darkness, and good ground cover, almost invariably succeeded in moving forward fairly rapidly.

A factor which helped the North Koreans to evade the attention of the United Nations air forces was the ability of their soldiers to live off the country and consequently the absence of a large administrative "tail." Consequently, the United Nations air forces only occasionally got a worth-while target in the battle zone.

The Korean conflict thus showed that the prevailing modern concept that air superiority is a necessary prerequisite to the launching of an offensive is not always true. Offensives can be launched successfully even with an adverse air situation, provided conditions are suitable and the weather is favorable.

Necessity of a Supreme Commander

The necessity of appointing a supreme commander in a theater of operations, when all three services and the forces of various allied nations are taking part, was shown very clearly in the Korean conflict. This again is no new lesson, but one which, as a result of World War II, has more or less been accepted as a principle of command and an absolute

necessity for the efficient prosecution of war.

There is no doubt that without the appointment of a supreme commander the United Nations forces in Korea could not possibly have functioned as a coordinated force.

Tactical Lessons

Influence of Terrain on Mobility

The Korean conflict has demonstrated that tactical mobility is not confined to the use of mechanized transport on roads. This lesson was brought home forcibly to the British forces in Malaya in 1941-42, and the United Nations forces learned it in Korea after a number of painful experiences.

As mentioned earlier, the terrain in Korea does not lend itself to cross-country movement by vehicles which perforce have to be confined to roads. At the beginning of the campaign, the Americans, who had become accustomed to movement only by mechanized transport, never got off the few roads that existed. The result was that these roads soon became congested with the rearward movement of the refugees and the forward movement of the American forces. Inevitably, therefore, mobility of the United Nations forces suffered and the North Koreans, who were accustomed to moving across country unhampered by large numbers of motor vehicles, were able to make themselves more mobile than their opponents. Consequently, they were able to bypass the forward positions of the United Nations forces and outflank them. The latter thus found themselves continually being cut off and their lines of communication severed. This occurrence was very prevalent in Phase 1 and occasionally in Phase 3 of the conflict.

The lesson thus is that in underdeveloped countries, where communications are poor, armies must endeavor to retain their mobility by good training and by their

ability to march across country unhampered by large numbers of vehicles. There must be no question of a withdrawal every time their line of communications is cut or their forward formations surrounded. Whenever this happens, the formation or units concerned must be prepared to stay and fight. Therefore, it follows that defense must invariably be organized on the principle of all-round defense.

Fire Power

The value of concentrated fire power is another of the major lessons of this conflict. Its full application was demonstrated only in Phase 4 of the campaign when the necessary means had become available to the United Nations forces. Throughout this phase, they were able to force the Communists to call off their attacks even before they were launched by the use of their enormous fire power alone. The Communist forces, whenever they were found to be concentrating for an attack, were subjected to a terrific bombardment from the integrated fire power of land, air, and naval weapons. The casualties inflicted by these heavy concentrations of fire were so great that the Communists soon realized that attacks under such conditions were likely to prove abortive and extremely costly.

Therefore, it is clear that the side which possesses such a great preponderance of fire power and, what is more, is in a position to keep up the necessary ammunition supply possesses a great advantage over the other. Attacks under such conditions by the other side are practically impossible. Conversely, an attacker must ensure that he has sufficient counterbombardment weapons to neutralize the defender's weapons. Unless these can be made available in adequate numbers, the attacker's casualties, even before the attack is launched, will become so heavy as to make the actual attack itself an impracticable proposition.

Importance of Patrolling

The Korean conflict has shown that patrolling is fundamental to the maintenance of good morale and the obtaining of sound tactical intelligence. During the early days of the struggle, the American forces were guilty of insufficient and occasionally no patrolling. The results of this deficiency were very serious. The American forces were not able to get accurate tactical intelligence and this enabled the North Koreans frequently to achieve tactical surprise. The adverse effect of this on the morale of the American infantry and subsequently of the entire army was very great.

Good patrolling is an essential characteristic of an army, and it is vital that all possible steps should be taken to ensure that this is not lost sight of in peacetime.

Organization, Equipment, and Training— ‘Teeth-Tail’ Ratio

The North Koreans, as well as the Chinese Communists, have derived great tactical and certain strategic advantages by their acceptance of certain principles of organization, which permit their formations to have a much higher ratio of combat elements to service units, as compared with the American or British systems.

Thus, although the over-all strength of a Communist division is much less than that of an American division, its infantry strength is greater. This has enabled the Communist divisions to hold more ground and attack with greater “punch” than the divisions of the United Nations forces. The other advantages of having a small “tail” have already been discussed in this article.

It is interesting to compare the figures of a Soviet division (North Korean divisions are organized on the Soviet pattern) and an American division. A Soviet infantry division of 10,800 men has the same fire power as a United States division

of 18,900 men. Carried further, statistics reveal that in wartime the Soviets will require 22,000 men to maintain an infantry division in the field while the United States will require 60,000 men.

It is, of course, inevitable that this high ratio of "teeth" to "tail" must cause a lowering in the administrative standard of the Communist forces. Therefore, their repair and recovery organizations, services of supply, and medical facilities cannot be of the standard of the American or British Armies.

The organization of the Communist forces thus, although conferring some immediate tactical and strategic advantages, does bring about certain administrative problems which result in the inevitably greater wastage in both manpower and equipment.

The conclusion, therefore, which we arrive at is that neither of the two systems is perfect in itself. Different nations have to adopt the system which suits them best and which imposes the least strain on those resources—be it manpower or equipment—in which they are in short supply. Certainly the advantages of having as much infantry as possible have been forcibly demonstrated, and it is felt that if a compromise between the two systems could be effected which provides for the inclusion in the division of a larger infantry element at the expense of nonfighting elements, it would be well worth adopting.

Co-operation Between the Services

Modern war requires close co-operation between the three services. Wars cannot be won by any one service alone, nor can one service remain the predominant partner throughout a campaign. The truth of these maxims has been clearly demonstrated in Korea.

The United Nations air forces have, by obtaining and maintaining air superiority, made it possible for their own land forces to move on congested roads with-

out much interference from the Communist air forces. The United Nations supply lines across sea and land have been kept open while those of the opposing forces have been harassed. Para dropping of troops and supplies behind enemy lines has been made possible, while good army-air co-operation has enabled the land forces to make the fullest possible use of the large air support available. This was particularly useful where the fire power, reconnaissance, and transport carrying characteristics of the air were concerned.

The United Nations naval forces too have played a very important part in the conflict. They have helped to convey troops and materials to the theater of operations, and have kept open their own sea lines of communication while harassing those of the opposing side. They have prevented the Communists from making sea landings on the flanks of the United Nations forces, and whenever necessary evacuated any of their own troops which may have been surrounded. An example of this was the evacuation of Marine units during Phase 3 of the conflict.

The conclusion at which we arrive, therefore, is that all the three services must train in peacetime to ensure perfect interservice co-operation so that they can work as an integrated team under a single supreme commander in case of war.

Equipment in War

World Wars I and II, and now the Korean conflict, have demonstrated the ever increasing part that equipment has come to play in modern wars. Equipment together with trained available manpower are the factors which indicate a nation's general preparedness for war.

The entire question of equipment has to be considered from two points of view—quality and quantity.

Equipment for modern wars must be the best possible that can be made available, incorporating the most modern scientific developments. A nation which

loses the race of armaments in peacetime starts off at the commencement of hostilities with a severe initial disadvantage which may easily prove fatal.

Moreover, there should be sufficient reserves of equipment available to allow for both battle wastage and for the expansion of the armed forces until such time as the nation's industry can get into full war production.

It will be appreciated that in peacetime these two points, coupled with the question of finance, will be at variance with one another. The desirability of having the most modern types of equipment will constantly militate against the necessity of having adequate reserves of them.

From the brief summary of the operations which was given earlier in this article, we can see how success in the conflict has shifted from one side to another, depending upon which side has had available at the time superior equipment and manpower. The lessons, therefore, which we can draw from the equipment aspect are:

1. Adequate reserves of the most modern types of equipment are necessary if successful war is to be waged against an industrialized power possessing comparable manpower.

2. Owing to the difficulties and uncertainty of foreign supply, especially in war, it is vital that the equipment requirements of a country's armed forces be dependent on her own national industry.

3. All other things being equal, final victory will come to the side which can maintain its armed forces longest on the battlefield, or in other words on its sustained industrial capacity.

Tank Characteristics And Antitank Technique

The importance which armor obtained in World War II has been retained in the Korean conflict. The North Koreans, during the early days of the campaign,

gained a great advantage over first the South Koreans and later the United Nations forces by their possession of the Soviet-built *Josef Stalin* tank. This low silhouette, heavily armored and heavily gunned tank proved more than a match for the American tanks and such antitank weapons as they had available. The comparatively heavy American tank losses and the ineffectiveness of their available infantry antitank weapons against these tanks produced grave results both tactically and from the point of view of morale of the American forces. Matters did not improve until the end of Phase 1 or the beginning of Phase 2 when heavier American tanks were rushed in and the 2.36-inch rocket launcher, the infantry antitank weapon, was replaced by a heavier 3.5-inch weapon. This proved capable of knocking out the *Josef Stalin* tank at reasonable ranges. In addition to this infantry weapon, the Americans also introduced an armored tank destroyer which could take on the *Josef Stalin* tank on more or less equal terms. It was noticeable that the introduction of this new equipment had a very marked influence both on the tactical conduct of operation and on the morale of the United Nations forces.

From the foregoing, certain important conclusions are manifest:

1. It is obvious that tanks of good performance and in adequate numbers are a necessary component of every modern army. A proportion of these must either form part of the infantry formations or be capable of working in close co-operation with them.

2. The characteristics of these tanks must in no way be inferior to those of potentially hostile countries.

3. There must exist within the infantry battalion an antitank weapon capable of knocking out the heaviest existing tank.

4. The divisional antitank weapon must be armored and self-propelled. Its

characteristics should certainly be such as to allow it to take on enemy tanks on equal if not better terms.

Mental and Physical Toughness

Modern wars are as exacting in the toughness they require from its participants as the wars of the past. The Korean conflict has proved conclusively the truth of this statement.

Modern battle requires both mental and physical toughness. Not only must a soldier be physically capable of undergoing considerable hardships, but his mind also must be so attuned as to consider the acceptance of these hardships as incidental to the completion of any task given him. Of the two, if anything, the quality of mental toughness is the more important. Provided a soldier is trained to be mentally tough, he can ordinarily be expected to undergo considerable physical hardships in the execution of his duties. The converse is not necessarily true.

The North Koreans and the Chinese Communists are naturally tough races—nature and low standards of living make them so. Combine this with their complete faith in the righteousness of their Communist cause and we can better understand the foe which the United Nations forces had to face. In this they resembled closely the Japanese soldiers in World War II, who were able to live on practically nothing and expected none of the supplies and amenities which the soldiers of more advanced countries like the United States and Great Britain consider essential.

The resulting advantages to the Communist forces were very appreciable, especially during Phases 1 and 3 of the conflict. Apart from such advantages as have been mentioned earlier in this article—the removal of supply troubles and

a low "tail-teeth" ratio—it enabled them to carry out their large-scale infiltration tactics. In addition, the acceptance by their soldiers of prolonged periods of considerable hardship without lowering their morale enabled them to maintain, on the battlefield, much larger effective forces than otherwise would have been possible.

The lessons to be drawn from the foregoing are obvious. It will be appreciated that, of necessity, serving conditions in the armed forces of a given country are based on and approximate the general standards of living which prevail within that particular country. As the latter differ from country to country, so will the former. What is important, however, is that the armed forces of those countries which have a higher standard of living must make every effort to ensure that their soldiers, sailors, and airmen do not get "soft" by their comparatively better and easier conditions of service, and that, in particular, mental toughness of every individual is fostered by good propaganda, sound education, and realistic training to the highest degree possible.

CONCLUSION

It is evident that although the Korean conflict has brought out no new lessons as such, it has certainly emphasized a number of very important ones gained through combat in World War II. It has, for instance, again shown that success in modern war is not the outcome of any one factor alone, but is the result of a combination of many in which the mental and physical qualities of the human being together with the material resources available play an all-important part. Moreover, it has brought out the value of close interservice co-operation and the necessity of having a single supreme commander to direct the combat operations.

The First Line of Offense

Digested by the MILITARY REVIEW from an article by Flight Lieutenant G. W. Waddington in "The Royal Air Force Quarterly" (Great Britain) April 1952.

BRITAIN'S first line of defense is the Royal Air Force. This significant change of policy followed shortly after the end of World War II and since then very little has been done to enlarge upon the statement and all that it implies.

For the general public, the word "defense" means the provision of fighters to prevent enemy aircraft from violating the air over this country—in the best tradition of the Battle of Britain. The Fighter Command has not been slow to take advantage of this conception, and we have witnessed its complete re-equipment with jet fighters. Some squadrons have had more than one change of aircraft and the auxiliary fighter squadrons have also been re-equipped with jet aircraft.

Few will deny that as a whole the British are a peace-loving people; aggression in any form is the furthestmost thought in our mind.

A Wrong Attitude

In itself, the use of the word "defense" engenders a wrong attitude, for it implies that we should make this island of ours as secure from attack as possible and suggests that our shores and the air above us are our only concern. This defensive outlook, if pursued to its logical conclusion, suggests that a strong fighter defense and control of our sea lanes should suffice for all our requirements.

First Line of Offense

These things are necessary—to a degree—but from a defensive point of view it represents a negative attitude and gives no thought to the other aspects of defense, namely offense. Militarily, the two words are inseparable and are admirably summed up in the well-worn but true saying: "The best form of defense is attack." Some of

our best-known leaders in the Royal Air Force have put it more simply: "It is no use having a goalkeeper if there are no forwards," or, "Of what use is a boxer who has a good guard but no punch?" And so, when it is said that the Royal Air Force is Britain's first line of defense, it should be remembered that it is the first line of offense also. In the event of the outbreak of hostilities, the offensive arm of the Royal Air Force is the only means whereby a blow which hurts can be struck at the enemy within a matter of hours. What, then, is the offensive potential of the Royal Air Force at present? In contrast with the Fighter Command the situation is not very good.

Bomber Command Equipment

It is no secret that the Bomber Command squadrons are still largely equipped with the wartime and now obsolescent *Lincoln* bomber. New blood has been injected in the form of American *B-29* bombers, rechristened *Washingtons*, an aircraft which is more advanced than the *Lincoln* but which has been superseded in America by more advanced types, such as the Boeing *B-47*. There are a few *Canberra* jet bombers, but one can hardly say that the Bomber Command has "squadrons" of *Canberras*, fully operational. Thus, the over-all picture is not bright. For obvious reasons, the *Canberra* is only an interim type. Without a modern, long-range, four-engine jet bomber how can the Bomber Command train for the future? As far as the major proportion of the Bomber Command is concerned, it might be said that very little new is being done. Day-to-day flying, training, and tactics are almost as they were at the end of the war.

Why is this? Why is the Bomber Com-

mand at such a low ebb? Why does the future seem to hold out so little promise for the provision of a modern "first line of offense," without which the Royal Air Force cannot hope to fulfill its over-all tasks of providing the first line of defense? There are several reasons which may be advanced to answer these questions; they may or may not have a deciding influence in determining the future of the Bomber Command.

Influencing Factors

Inevitably, there had to be a period of waiting at the conclusion of the war before any new bombers were introduced into service. The services as a whole were demobilizing and the aircraft factories switching over to peacetime production in an effort to make up for the lost ground in the field of civil transport aircraft. At that time, the *Lincoln* was quite new and there were enough for our current needs. Also, investigation into the use of gas turbine engines in bomber aircraft was underway, and it was prudent to wait and see how its development was going to affect bomber types.

Another factor to be considered is that at the end of the war Soviet intransigence in world affairs had hardly begun to be felt. There was a good reason to suppose that we had plenty of time in which to modernize our aircraft and, using the latest scientific and technical developments, could produce, at our own convenience, aircraft which would give us immediate superiority over those of any other nation. This policy may have been a reflection of prewar policy, when, for the purpose of planning, a period of 10 years was given during which it was confidently assumed that no war would occur. This period, as we know now, was extended and re-extended and, as a consequence, our aircraft development proceeded at a leisurely pace.

From an economic aspect, we ended the war as a poor nation, and the cost of re-equipping the Bomber Command was one

which could hardly have been justified in the immediate postwar years, when the prospect of a new war was as remote from our minds as it is now near.

Lack of Political Harmony

All these are good and potent reasons why the Bomber Command has had to make use of its wartime aircraft. However, the war has been over for close to 7 years, meanwhile the idea of the three great nations of the world living together in an era of political harmony has not been realized. The Soviet Union has made it perfectly plain that she intends to cooperate as little as possible with her wartime allies and is willing to go to extreme length to achieve her aims. Already, according to various authorities, the Soviet Union is building up her forces to an alarming degree, and even the combined forces of the countries of the North Atlantic Treaty Organization are not yet in position to offer decisive resistance.

To this situation must be added statements made by both President Truman and Mr. Churchill to the effect that the Western powers intend, in the future, to "bargain from strength." While the NATO armies expect to be considerably strengthened by the end of this year, the Royal Air Force, which has a vital part to play and in particular the Bomber Command, seems to have had little attention. On the other hand, the United States Air Force, especially its strategic bomber arm, has been considerably strengthened. Is this another example of handing over our responsibilities to the Americans? Perhaps the Americans are eventually going to assume over-all responsibility for strategic bombing? In a speech at the Mansion House on 19 April 1951, the Chief of the Air Staff said: "So long as the world is in the state it is today, it is our ability to strike back, instantly and overwhelmingly with the bomber, that is the best safeguard of peace and the soundest guarantee of victory if war is forced upon us."

He also said: "For the present, that ability is in the main confined to the United States Air Force. Bomber Command for some years to come is and will be primarily a tactical bomber force. As such, it has a vital part to play in the defense of Western Europe, and it will be mainly used in support of the Supreme Commander for that purpose. But that limited role has been forced upon us temporarily by circumstances and does not represent a permanent policy."

The question is: What are the circumstances which have forced this policy upon us and how long will they last?

Another Problem to Consider

There is a further problem which affects any re-equipment of the Bomber Command. Just as the dividing line between the manpower needs of industry and those of the services is very finely drawn, so equally fine is the division within our aircraft industry between the production of civil and military types of aircraft. The demand for the De Havilland *Comet* and Vickers *Viscount* airliners has shown how this delicate balance is likely to be upset in the future. Contractors for these and other aircraft types have received oversea orders amounting to millions of pounds, and many of these are valuable dollar earners. At a time when the economy of the country is in such straitened circumstances, and we are unable to close the gap between our imports and exports, are we to sacrifice such a valuable contribution to the national economy in favor of the development and production of new military aircraft, particularly bombers?

On the face of it, it would seem that we cannot afford to have a modern Bomber Command, and yet surely we cannot equally afford to be without one, in view of the present world politics.

This present period, then, and the years immediately ahead would seem to be the right time to raise the Bomber Command

from the doldrums. How is this to be done without upsetting the balance within the aircraft industry? Or, rather, it *must* be done without affecting the output of civil aircraft.

A Possible Solution

When compared with the Bomber Command, the present state of the Fighter Command, as regards both numbers of squadrons and types of aircraft in use, is good. Cannot, therefore, a halt, or at least a retardation, be called in this direction in favor of modern bomber production and let the see-saw, now heavily weighted down at one end, gently fall down in the opposite direction over a period of, say, 5 or 6 years? During this period the Fighter Command would not be neglected; on the contrary, it is visualized that fighter research and development will go on and that possibly one or two prototypes may achieve limited production. This safeguard is necessary in order that a few squadrons would have the necessary aircraft with which to continue the high-speed battle, and also to ensure that an up-to-date fighter is available for rapid and expanded production should the military or political situation demand it. Any large-scale re-equipment of the Fighter Command during this period, however, would not normally take place. No plea is made for building up a large Bomber Command; on the contrary, let it be smaller even than the present one. Size does not greatly matter so long as the aircraft are up to date, capable of waging war at adequate range, experience in operating pure jet or prop-jet bombers is obtained, and there is developed a hard core of skilled personnel on which to build should war occur.

A further reduction in the size of the Bomber Command immediately raises the problem of the future of the flying personnel already in the Bomber Command and how the discarded aircraft, old as they may be, can still be used to the best advantage, to say nothing of minimizing the

effect of the policy on the flight training establishments.

Here is an ideal opportunity to give the Coastal Command a much-needed boost. Their need for a more advanced type of aircraft is not so great, yet their role of protecting, in company with the Navy, our vital sea lanes from submarines and surface raiders is likely to be made more difficult and important than ever in the future with the advent of the snorkel submarine. The *Lincoln* aircraft, fitted with modified engines for low-level flying, could easily be adapted for this type of work. Thus an over-all economy would be achieved and the output and training of the flight training schools would be virtually unaffected.

Once the re-equipment of the Bomber Command had been effected, the see-saw could be allowed to swing down in the di-

rection of the Fighter Command for a period of, say, 4 to 5 years and fighter production would again take precedence. It is obvious that our present and probably our future economic and industrial requirements will not permit us to do everything at once, and if we are really to have an effective offensive side to our first line of defense some concession must be made in favor of the bomber.

As Mahan says: "It behooves countries whose people, like all peoples, object to paying for large military establishments to see to it that they are at least strong enough to gain the time to turn the spirit and capacity of their subjects into the new activities which war calls for." The crucial part of this statement is that it behooves countries to see to it that they are strong enough to gain the time. In this respect an up-to-date Bomber Command is essential.

A Matter of Principle

Digested by the MILITARY REVIEW from an article by
Lieutenant Colonel F. P. Serong in the "Australian Army Journal" March 1952.

IN MATTERS tactical, there is occasion to be increasingly disturbed by the insistence of many officers who state, "Circumstances change, but the principles always apply."

Now, I have no quarrel with the so-called "principles of war"—at present. These are not the "principles" under reference. What, in this context, is meant by "principles" are certain tactical techniques. This point may, of course, be argued. Usually, when the protagonists are pinned down to cases, they generalize and say, "Of course, I was talking about the principles of war," or, sometimes, "I was referring to operations on a higher (lower) level." But, unfortunately, that is not the sense, or the context, in which

the cliché is first delivered, and the student never gets the chance to hear this off-the-record renunciation.

I repeat, I have no quarrel with the principles of war, in spite of the fact that they are almost invariably rewritten after each major war, that few first-class powers agree on what are, in fact, the principles, and that one very illustrious soldier concluded his list with "etc." No, they are immutable!

A Tactical Headache

My problem is the application of the term "principle" to "the principles of attack," "the principles of defense," "the principles of this, that, and the other thing." These principles are our present

tactical headache. To be particular, the issue can be crystallized by its application to "extended" defense, or, so the Americans call it, "mobile" defense.

We hear that in solving problems of extended defense "the normal principles of defense still apply." Now the so-called "normal principles of defense" are stated in *The Infantry Division in Battle, 1950*, as:

1. Organization in depth.
2. Concealment of localities.
3. Centralized control of artillery.
4. All-round defense of localities.
5. Counterattack for lost vital ground.
6. Protection of obstacles.
7. Provision of comprehensive signal communications.

'Normal Principles' Are Mutable

They are based upon mutual support, which, in turn, depends upon weapon performance. Weapon performance has limitations. It must surely be apparent, therefore, that, when frontages are so extended that localities can no longer be mutually supporting, and can no longer be supported by centralized field artillery without the latter moving, a condition has arrived which is not catered for by "the principles"—our defense has been strained beyond the elastic limit. Rigid attempts to apply "normal principles" fall down in the face of their own obvious futility.

No Extravagant Claims

It should be made clear, at this point, that the excellent official publications on the subject make no such extravagant claims for their "normal principles." *The Infantry Division in Battle, 1950*, in its treatment of "defense on wide frontages," goes to great lengths to water down the application of certain "principles"—notably, the centralized control of artillery. This also applies to the training directive on defensive warfare issued as a Military Board Instruction. The trouble lies in lower echelons.

The outcome, both in this country and overseas, has been payment of lip-service to the need for study of "extended defense" (to continue our illustration) by the conduct of a series of exercises with two main characteristics. First, where a division is under consideration, sectors are limited to a frontage which enables the divisional artillery, with a stiffening of allocated medium artillery, to just barely support the extreme flanks without shifting. And second, the exercise is usually set on a road system which radiates inward, so that if the "principles" cannot be applied forward, one can take his division several miles to the rear, where the "principles" are more comfortable. Likewise, the reduced frontage rearward helps considerably in arriving at a solution to the vexatious problem of where to place the reserve. This sort of thing is not uncommon in the junior classes of secondary schools, where the student looks up the answer in the back of the book, and adjusts his problem data to fit. There, however, the masters are trained to detect such things and take swift and appropriate action.

The effect of such exercises, plus an injection of "the principles always apply," upon the young officer looking to them for guidance is:

1. Complete bewilderment, when a short test action from the enemy's point of view reveals obvious inadequacies.
2. Loss of confidence in himself, when he endeavors to apply the principles and cannot, because they do not fit.
3. Loss of confidence in his instructors.

The effect upon the Army as a whole is that it passes the years in a fool's paradise, believing its "principles" adequate to any eventuality ("they always apply"), and the tactical techniques, and organizational equipment changes necessary to keep ahead of new circumstances, are never developed.

Let us then be completely honest with ourselves, and recognize our "principles" for what they are, namely a few pithily expressed ideas, which, *as at the time of conception*, translated weapons and organizations into tactical methods. Like other forms of life, they can exist only as long as their environment remains unchanged. Once that changes, they must adjust themselves to the new environment, or make way for something else.

But to go further, "What about the adherents of *the principles always apply?*" Let them be honest, too. Let them admit to themselves that they do find it rather comfortable to have a nice, crystallized tactical doctrine that they acquired several years ago when their minds were still fairly flexible, and they, perhaps, were not yet completely immersed in the toils and cares of day-to-day administration. Let them understand that the stifling of all new thought by the blanket application of our reference phrase is the worst possible disservice they can render.

What about the rest of us? Take this thought. No institution can continue to survive attack from the outside unless it contains within itself the element of self-criticism. This statement has particular

application to the armed services of a nation at peace, and to the tactical doctrines of those armed services. It is transparently obvious that tactical doctrine must, at all times, be prepared for, and subject to, destructive criticism. Only thus can flaws be revealed and rectified in time. It matters nothing, if the critic is unable to suggest a remedy to the alleged or revealed fault. If he cannot, others will. It matters nothing if the criticism is proved wrong, for thereby the current efficacy of the doctrine is established, and confidence in the doctrine and its propounders is strengthened. What does matter is the perpetuation of a once-sound doctrine in circumstances which it no longer fits. And "the principles always apply" is the most effective means of ensuring that just such a tragedy can occur.

Therefore, let us all, and in particular, those whose words carry great weight with the young, be very careful to avoid any possibility of being misunderstood in the use of this tiresome phrase. Better still, let us drop it altogether, and if someone asks for an honest explanation of a tactical situation in terms of ground, weapons, and equipment, let us give it to him in just those terms.

The Coastal Command

Digested by the MILITARY REVIEW from an article in
"The Navy" (Great Britain) March 1952.

THE claim that the Royal Air Force Coastal Command should be transferred bodily to the Royal Navy has appeared from time to time for many years and is generally based on a misconception of maritime power. This used to be exercised solely by warships. It is not so now, and it took a modern war to demonstrate that air power on a large scale is vital if maritime warfare is to be waged successfully.

Some of the duties of air power in mari-

time warfare were envisaged prior to the last war, but many of great importance had not been recognized. The Admiralty as sole arbiters in prewar years of maritime power made no pronouncements as to what part air power should be required to take and it was no responsibility of the Air Ministry to do the job for them. It was, however, dimly realized that maritime air duties could only be undertaken on a large scale if they were superim-

posed on essential basic air force training and not the other way round.

If the Coastal Command started the last war gravely understrengthened with semiobsolete aircraft, much of the blame must be shouldered by the naval staff policy of the peace years which failed to recognize either the menace from hostile aircraft and U-boat attack or the potential value of our own air power. As late as 1939, the Admiralty stated there was no requirement for fighter protection to His Majesty's ships at sea as they were perfectly able to look after themselves and, right up to the outbreak of the war, naval staff opinion saw no necessity to develop an attack technique for aircraft against U-boats as the asdic-fitted surface craft were held to be effective against any attacks which might be made by enemy submarines. Moreover, the essential training of shore based bombers in locating and attacking fast-moving modern naval targets was smothered in the academic controversy of bombs versus battleships and the use of bombers in major fleet actions, oblivious of the fact that Germany possessed no major fleet.

During the last war, the maritime air power was provided almost entirely by the Royal Air Force and all three RAF commands were equally indispensable. The following maritime objectives were achieved by the RAF as a whole:

1. The immobilization of three German major naval units in Brest for 11 months at a critical stage of the sea war.

2. The interruption and final strangulation of German coastwise sea communications by direct air attack and aerial minelaying.

3. The carrying of antishipping operations into the Baltic by aerial minelaying which ultimately stopped the vital iron ore shipments from Sweden.

4. Together with surface escorts, the defeat of the U-boats in the North Atlantic.

5. The protection of our own coastwise shipping against enemy air attacks.

6. The denial of the Bay of Biscay passage route to surfaced U-boats.

7. The destruction of large amounts of enemy shipping including 63 U-boats in enemy ports, the disorganization in the cargo handling facilities, and the crippling of repair work.

8. The destruction of several major naval units, notably the *Tirpitz* and the *Tromso*.

9. Together with the United States Army Air Forces, the serious delay in the scheduled delivery of the new prefabricated U-boats between mid-1944 and the end of the war.

The Coastal Command was not alone in any one of these achievements. All three commands of the Royal Air Force (and a few fleet air arm squadrons) shared in these tasks both individually and in loans or transfers to each other. The flexibility of an independent air force alone makes it possible to direct available air resources on to whatever maritime requirement is indicated in the changing course of a major war.

Other Commands Participated

Any naval claimant to the Coastal Command must also take on the burden shared by the other two commands. During the war, the Fighter Command supplied thousands of sorties each month and the continued use of the vast ground radio detection finder system in the protection of shipping against enemy aircraft. Moreover, it provided hundreds of sorties each month in direct attack on enemy craft at sea between the Low Countries and Brittany and gave extended long range top cover to many of the Coastal Command's antishipping strikes off Norway and northern Germany. The Bomber Command not only shared in direct attack of enemy shipping at sea but shouldered practically the entire burden of minelaying from the air, during which 50,000

mines were laid, and the bombing of enemy ports, building yards, and naval bases from Trondheim to Bordeaux. If the naval claimant bases his argument on the ground that naval ownership is necessary for aircraft on maritime tasks, he must take over a large part of the Royal Air Force.

However, there is no "dark art" about the operational exercise of maritime air power and it is ludicrous to maintain that only naval officers know how to handle sea-air operations. During the last war, the fleet air arm was largely recruited straight from "civvy street" and few Royal Navy officers had ever controlled air operations, let alone flown an aircraft.

If the naval claim to the Coastal Command is granted, what is the Admiralty going to do with it? They have difficulty in manning even their own fleet air arm and cannot expect the Coastal Command personnel to don dark blue uniforms overnight. Even granted that some way was found to man, train, and maintain the flying boats and landplanes now in the Coastal Command, the Admiralty would soon find that they were no nearer to providing their own shore based fighter protection organization with aerial minelay-

ing on any worth-while scale of resources with which to make heavy attacks on naval targets in enemy waters and ports.

The next step would be either to beg for assistance from the remaining Royal Air Force or to attempt to build up an independent shore based naval air force. If the Royal Navy is going to be allowed a separate air force, because this is what the claim for the Coastal Command will amount to, there will, in regards to requests for aircraft and manpower, be two sets of competing users and probably a third if the Army is not left out in similar claims.

Separate Air Forces Costly

It needs no elaboration here to realize what confusion, overlapping, triplication, and competition this would lead to. The economic structure of this country simply cannot stand any sort of separate air forces. It was precisely because of the growing impossibility of such a situation that the Royal Air Force was created in 1918.

Only countries of unlimited manpower, space, and wealth can afford luxuries like separate air forces, and even then the inefficiency and waste are inexcusable.

The Impact of Air Power on Switzerland's Neutrality

Translated and digested by the **MILITARY REVIEW** from an article by
Herhudt von Rohde (former major general in the German Luftwaffe) in
"Flugwehr und -Technik" (Switzerland) April 1952.

EVERY country judges the world situation in accordance with its own individual way of thinking. Moreover, if a country's dealings in the political, economic, ideological, and military fields have been satisfactory for centuries, it usually is unwilling to turn away from the old principles. Therefore, before a country makes changes in its policies, and accordingly in its conduct of war, the world situation must be

examined to determine whether such changes are necessary.

When one attempts to obtain a clear picture of the present military situation in Europe, he finds it impossible to eliminate the ever present political elements. These elements play an important role in the waging of war for, according to Clausewitz, "the main lineaments of all great strategic plans are largely of a political

nature. . . .” Moreover, one cannot look upon land warfare or sea warfare as the main lineaments of strategy, for air warfare has become an important part, if not the decisive element, of strategy as a whole. This is true whether the country concerned occupies a continental or an intercontinental position.

The over-all picture in Europe at the present time is determined by the following situations and events:

1. The formation of two opposed major coalitions with fundamentally different aims.
2. The division of Europe in which there is no longer a balance of power, which formerly had a stabilizing affect on Europe.
3. The appearance in Europe of a non-European power (the United States), plus the fact that that country's potential enemy, the Soviet Union, includes a large part of the Asiatic Continent in its objective.

Significant Points

With these conditions in mind, the following points seem significant for Switzerland:

1. The political possibility that if leadership in Europe were achieved by the East, they would not hesitate in annexing, in one way or another, formerly neutral countries.
2. Germany, now occupied by the East and the West, has become a military vacuum, which will have no real security for some time to come, and is, therefore, vulnerable to aggression.
3. In view of the political situation, and the existence of the East's strategic aim which is based upon the most rapid seizure of territory possible, the northwest portion of Switzerland (from the point of view of geographical location and type of terrain) would be of greater significance in the event a penetration was aimed at southern France than was ever the case in former wars. Considering the space-re-

taining strategy of the West, the Alps and Switzerland form a pivotal point between the Rhine defense zone and Western and Southern Europe. The loss of Switzerland, or its continued neutrality, could place at stake the West's last foothold in Europe, and the subsequent winning back of Western and Central Europe.

4. Switzerland, with its high mountains, could probably defend itself for a considerable period against invading ground forces. However, if an invader employed a surprise air attack, using large numbers of airborne troops, he would be able to imperil the Swiss ground defense forces in areas of great military importance.

Opposed to these possibilities is the strict principle of the armed neutrality of Switzerland, with means which are inferior to those of all the great coalitions. The “forbidding of all military alliances in time of peace” continues to be the guiding line of Switzerland's policy.

When and if matters will reach the point of a “hot” world war cannot be foreseen. However, every passing day gives proof of the fact that neither of the great coalitions is inclined to alter its views. As a result, the prospects for a peaceful settlement and the re-establishment of a balance of power are disappearing. Only when the military and political cartels of the East and West are dissolved can there be peace. Without peace there can be no genuine neutrality. However, without a real test of strength this goal cannot be reached. Statesmen and soldiers must take this into account.

Probable Theater of Operations

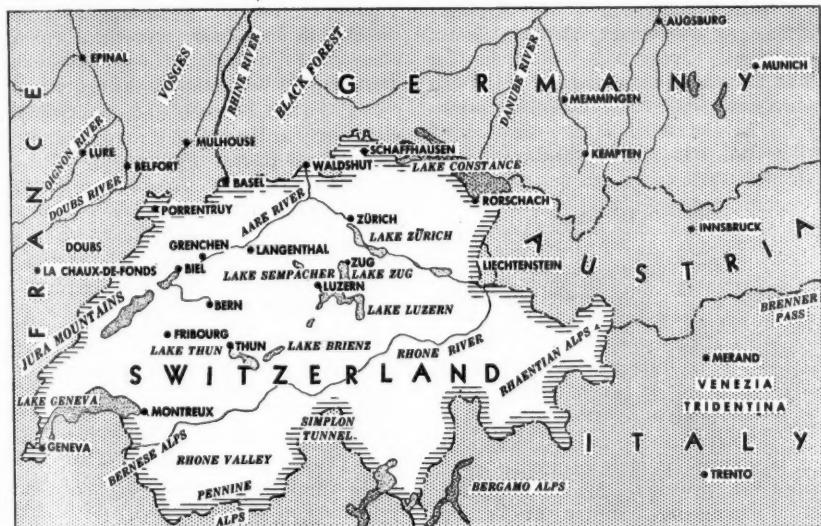
Germany is regarded as the probable principal theater of operations in the event of another world war. Here, the possession of the area coincides with the political and strategic objectives of an aggressor. It also constitutes his jumping-off place for a drive to the west and southwest. This drive, however, would be considerably facilitated and speeded up if

the invader could succeed in eliminating the southern part of the Rhine defense zone south of Mulhouse, by means of a mass air-landing, say, in the Belfort depression.

For such an operation, the rapid advance of the invader to the Rhine and the western frontiers of the German Federal

theory of the "strong right flank" or of the break-through in the center and, from the very outset, occupy a position in the rear of the entire northwestern European defense zone. This would constitute a tremendous surprise to the West.

Whether an operation of this type would be a violation of Swiss neutrality,



Republic is a strategic requirement. The Western defense forces in the German Federal Republic will offer violent resistance, to be sure, but there can be no such thing as a solid defense front to say nothing of an offensively conducted defense.

This air-landing, shortly before the forcing of the upper Rhine, carried on simultaneously with and supported by a similar landing west of Basel for opening the passage across the Rhine, lies within the radius of action of the modern transport plane and the excellent landmarks of the region would be of invaluable assistance in guiding the transports to the objective areas.

In view of the feasibility of such an air operation, an attacker can disregard the

Switzerland herself would have to decide. However, the seizure of Basel would have to be evaluated as a violation of neutrality in any case.

The air area that would have to be used for such an operation would extend from Schaffhausen to a point north of Porrentruy, some 112 miles over Swiss territory.

During the course of possible fighter battles, intrusion of Swiss fighters over French or German territory could hardly be avoided. This fact, as well as the possibility that the air-landing might extend into Swiss territory, could lead to the West's no longer respecting Switzerland's neutrality. No doubt the invader would count on such a course of action and have reserves available to fly to the attack areas. These reserves could land

north of the Jura Mountains in the areas of Schaffhausen, Waldshut, and Basel. In a more comprehensive plan, they could also land south of the Jura, heading for Bern and Lake Geneva by way of Zürich. In the latter case, the occupation of Swiss airfields by parachute forces and fast armored forces would be included in the invader's plans. This would affect the airfields at Rorschach, Zürich, Bern, Langenthal, Grenchen, Biel, and La Chaux-de-Fonds, as well as airfields around Lake Geneva. In this way, the possibility of the northwestern portion of Switzerland becoming a theater of war could develop.

Difficult Decisions

The decisions which Switzerland would have to make, under the pressure of events, would be difficult and of lasting consequences. However, one thing appears clear to us after a study of the described situation: a "military alliance" in time of peace could bring no advantages. It would bind Switzerland, in advance, to a definite course of action. Our geographical location, in a range of high mountains which divides the principal theater of action, will not make our country, at least to begin with, a major objective of the war plans of either of the two coalitions. This is not to be expected until the second phase of the conflict.

In the field of strategic warfare and tactical army co-operation, matters are somewhat different.

An advance by the East would aim at the military seizure of the entire European Continent. However, with this advance, the invader would expose himself to flank attacks from the Scandinavian Peninsula and Denmark, as well as from Turkey, Greece, Italy, Spain, and North Africa. As long as Yugoslavia holds out, central and southern Italy have a certain amount of security, even if a breakthrough into the Po Plain occurs. On the other hand, a combined operation out of

Bulgaria in the direction of Albania and then over the highway from Trento to lower Italy is not an impossibility. This, in its subsequent developments, could lead to a strategic division of the two Mediterranean basins and to a breaking down of the West's southern flank. Everything must be done to hold on to the air bases in Turkey, Cyprus, Crete, Egypt, Malta, and Sicily, for only from them is a certain amount of strategic action against the deep flank of the invader possible.

It is certain that air formations of the belligerent coalitions, which cross the Alps or fly along their ridges, will be pursued by the fighters of their opponents. The interruption of such battles above Switzerland tactically is not possible. In addition, an intervention by Swiss fighters would be looked upon as undesired involvement in the fighting of the foreign powers.

Careful reflection relative to the forms an air war in Europe would assume leads us to the conclusion that a country of small area and of military inferiority will not always be able to prevent the violation of its neutrality. However, it will be in a position to inflict certain losses on the air formations of the foreign powers that fly and fight above its territory. If these losses were too high, the attacker, because of his superior strength, could decide on forceful measures in the form of air attacks against military and other objectives within the neutral state. While the occupation of the neutral state by land, parachute, or airborne forces is not necessary, it could become a reality, especially if the attacker believed that it would enhance his chances for final victory in Central and Western Europe.

The events of aerial warfare that have just been discussed would occur if the Western allies, with the inclusion of a defense-ready German Federal Republic, succeeded in building up a strong defense in Western Germany and were able to halt the invader's advance. However, in

any case, there will be long and difficult operations before the invader could be driven out of this area. If this were accomplished, and with a simultaneous withdrawal of the invader from the upper Italian area, Switzerland's neutrality would be ensured.

On the other hand, Switzerland's situation would undergo a fundamental change if the invader succeeded in passing over the French Alps, the Rhine defense zone, and Holland to France, and as far as the Pyrenees, to southern Italy or into the Iberian Peninsula. Switzerland then would be cut off from the West, and could be reached only by air.

In this situation, the invader might consider it advantageous if Switzerland continued her armed neutrality, provided, of course, that assurance was given that Switzerland would continue to maintain this attitude with regard to the other belligerent. This policy would save the invader both troops and matériel which he could then employ on the war fronts, instead of having to use them for an attack upon Switzerland. However, if the invader considered that Switzerland could become a new vantage point to assist in gaining new territory, he would then either request disarmament and control, or compel it with his superior strength. That would be the end for Switzerland, and no doubt should exist as to the ultimatum's political, economic, cultural, social, and military consequences. The same thing would occur in the case of a "voluntary annexation" by the victor, forced, more or less, by "diplomatic" means.

During World War II, armies and entire theaters of operation were supplied

by air. More recently, West Berlin and the Korean theater have been the beneficiaries of air movement. With this in mind, why would it not be possible to support a country like Switzerland in a military, economic, and moral way?

If a prompt decision were made by the European family of nations, sufficient quantities of troops and supplies could be brought into this large-scale fortress that is Switzerland. The ground organization of the air forces as well as the actual fighting forces would find terrain that is suitable for supply and combat in the Lake Constance-Rhine-Jura Mountains-Lake Geneva-Montreux-Fribourg-Thun-Zürich-Luzern area. The high mountain regions would be equally important, but fewer forces would be needed.

Within a few years, air transport facilities should be developed to a point that they would be capable of undertaking such an operation. Such an operation, over a period of from 3 to 6 months, should be able to build up the necessary potential needed for starting a combined operation to provide a land corridor into Switzerland and, thereby, into Central Europe.

Conclusion

The leaders of a neutral country should investigate these possibilities and study them. A "military alliance" in time of peace is not necessary; however, with the possible courses that events may take, it may be impossible to maintain neutrality or avoid a "military alliance" in time of war. Neutral nations must consider this problem and determine their individual courses of action.

Helicopters for the Army

Digested by the MILITARY REVIEW from an article by
Major General R. H. Bower in "The Aeroplane" (Great Britain) 1 August 1952.

Nor without some reason, the British Army at times has been accused of preparing for the last war. Equally, the Army deliberately has not taken as much notice of this criticism as some people would like. If war is an affair of calculated risks, it is not a business in which reckless gambling is permissible. The stakes are too high. It is partly for this reason that in all countries the evolution of the means of making war is somewhat slower than might be expected. Tanks, rockets, and atom bombs all have their place in national armories, but none is omnipotent and each has to be considered critically in relation to other claims on manpower and on money.

Helicopter Transport

Without a doubt, aircraft have a large part to play, but even they must be properly evaluated, collectively, in relation to other weapons and, individually, in relation to each other. It is against this background that it is proposed to consider how far the Army could be assisted in its tasks by using helicopters as an integral part of its transport system. In doing so, it is important to realize that the Army regards its domestic aircraft as fast reconnaissance or transport vehicles which can fly, rather than as slow and clumsy aircraft. Therefore, such aircraft would have to be as readily available and as reliable in operation as is the jeep or the 10-ton truck.

Weighing the Advantages

The introduction of aircraft into the Army's transport system would only be justified if an economy in overheads could be achieved, or if some considerable military advantage, otherwise unattainable, could be gained. It is far easier to assess

the latter than the former, because in matters of administrative economy one runs straight into a number of vicious circles. For example, until it is known that real economy will result, no transport aircraft or helicopters will be allotted for permanent use by the Army. On the other hand, there will be no reduction in ground installations and transport until it is known that a permanent and reliable airlift for the lines of communication is available. Even if aircraft were to be allotted for this purpose in the later stages of a campaign, the army-air administrative overheads would be, at any rate for some time, in addition to, and not instead of, the ground administrative organization. There is, therefore, a good chance that the introduction of air transport might increase, not reduce, administrative overheads.

In civilized countries, where reasonably good roads and railways exist, the extra cost of moving men and supplies by air is considerable, and probably outweighs the military advantages. There are circumstances, however, when this may not be so, especially when the force is moving very rapidly in pursuit of a retreating enemy over country where the bridges have been destroyed. In an uncivilized country, where the normal means of communication are absent, air transport may be the only method of moving men and supplies over long distances and the military advantages outweigh all other considerations.

Korean Experience

The light four-seater helicopter already has proved its military worth in Korea for many purposes which are well known. The Army has stated its need for these aircraft and is particularly keen to see

them introduced for use in operational areas. They would confer great flexibility on the movement of commanders, staffs, and reconnaissance parties and, requiring no air strips, should be far less vulnerable on the ground and less unwelcome visitors to a headquarters than is the light fixed-wing airplane. These aircraft also have been used for casualty evacuation, but they are really too small for this purpose.

It is probable that a larger helicopter would prove more efficient in this role, and there might well be a place for small numbers of helicopters carrying six to eight stretchers, with the evacuation of wounded as their primary task. However, whatever the arguments as to size may be, it is certain that helicopters can save lives and, therefore, manpower, with an efficiency unattainable by any other vehicle. Their value will be greatly enhanced when they can be easily flown in inclement weather and more especially at night.

The Heavy-Lift Helicopter

Evaluation of the heavy-lift helicopter with a payload of from 5 to 50 tons must for some years be a matter of difficulty. For while there may be special tasks which demand a helicopter of a particular payload potential, for more general purposes it is probable that there is an optimum economic size. The economics will presumably depend on design and engineering factors, but for military utility other factors will also be relevant. If the aircraft is below the economic size, a large number will have to be built, together with reserves and spare parts, and many pilots will have to be trained with all the overheads that that will entail.

On the other hand, if the aircraft is too large, the initial cost will be high and there will be a loss in operational flexibility because of the smaller number of helicopters available. Furthermore, not all loads are large loads. With fewer

large aircraft in use, it probably will be more difficult to maintain a high rate of serviceability, and the loss of even a single aircraft may well produce an unacceptably high casualty rate. The solution to this problem must lie in a combined study of technical economics and user requirements so that a fair compromise can be achieved.

It has been suggested that a helicopter with a very high payload but relatively short range would pay a dividend as a high capacity and very mobile crane. It could lift heavy vehicles over water gaps, and it might result in a saving of time, labor, shipping, and other transport overheads. Such an aircraft might well be used for unloading ships across open beaches. The problem here might be to get a helicopter with a small enough rotor diameter but with large enough "craneage" payload to enable it to operate efficiently close to ships' masts and derricks.

Any attempt to cost account this method of unloading against more normal means would certainly show a heavy economic penalty against the helicopter. Indeed, except in a case of acute administrative crisis, the extra cost would probably outweigh the military advantage. However, these aircraft are versatile in operation and, being required for other purposes, might well be used to assist a rapid unloading of ships if operational priorities so required.

The Helicopter's Major Role

However, it is probably in very hilly and undeveloped marshy or jungle-covered countries where roads are few and bridges inadequate that large helicopters may be expected to pay their greatest dividend, and confer a very substantial military advantage on an army which can call on adequate numbers of them. In close country, small bodies of troops can have an important effect on operations, provided they are both mobile and administratively

self-supporting. This can be ensured in one way only; that is, by using helicopters to establish the troops tactically, supply them administratively, evacuate their casualties, and in the end either move or evacuate the troops themselves should circumstances require it.

The use of radio in hilly and close country is in some respects becoming more difficult. For reasons of security and portability, modern radio equipment is tending toward high frequencies which demand an optical path for efficient operation. This may well require the setting up of central radio stations on high ground or even mountain tops, entailing difficulties in the installation and maintenance of signal equipment and operators. Helicopters might be invaluable for this task, reducing a fairly formidable administrative undertaking to normal freighting proportions.

Airborne Operations

The trend of civil air transport development seems to indicate that in a few years all will be jets or turboprops and all will be pressurized. For these reasons, they may be unsuitable for parachuting and airborne operations. This means that special aircraft may be required if airborne forces are to continue to operate by parachute. Parachuting is a very expensive business, which costs a large sum of money for training purposes both in peace and war. The introduction of the helicopter, although initially expensive, would eliminate entirely the cost of peacetime training by parachute, and enable any lightly equipped formation to undertake an airborne operation.

Since the end of the war, airborne operations have been bedevilled by the difficulty of delivering transport equipment and guns in support of parachute units. With the abolition of the glider, various expedients have been tried. The most successful, and that which has been used by the American Army in Korea, is the

dropping of equipment on parachutes from *C-119s*. It is a fairly efficient method, but it is expensive in parachutes and equipment, and the preparation of loads takes a considerable time. An alternative is the powered glider or assault aircraft, but this needs reasonably flat ground for its operations and is, therefore, somewhat inflexible tactically.

If helicopters could be used, many of these difficulties would be overcome and there might well be military advantages to be gained. However, the payload range would have to be of the order of 10,000 pounds at 400 to 500 miles radius, and the speed would have to be greater than appears possible at present. Vulnerability would have to be reduced to a minimum, and the ability to fly in very bad visibility and at night would be a first essential. Were the helicopters to be used from aircraft carriers, strategic mobility would be extended to the range of the carrier plus that of the helicopter. Successive lifts from carrier to target might enable a relatively small number of helicopters to land quite a considerable force.

Whether the penalties inherent in rotary wing flight can be reduced sufficiently to enable helicopters to be used operationally by airborne forces remains to be seen, and it may well be that until the convertiplane becomes operationally practicable, we shall have to continue to use present methods for the delivery of airborne forces in the assault.

Important Tasks of the Future

It will be clear that the Army foresees many important tasks for the rotary wing aircraft of the future. There is, however, the ever present threat of the enemy air force and the effect that it may have on the operation of helicopters and transport aircraft of all types. In a condition of air inferiority, it is certain that the helicopter can be more easily concealed when on the ground than can the fixed-

wing aircraft of similar size. The air strip and its dispersals at once disclose at least the possibility of airplanes being on or near it. Helicopters, however, if properly used, should be capable of wide dispersion and complete concealment. In the air, each will be equally vulnerable. However, when the helicopter has been provided with proper blind-flying and navigational aids, it will be able to operate at times when enemy fighters will be most unlikely to interfere.

That it will be some years before the Army can expect to have the use of many helicopters is a fact which will be dictated by the rigors of finance alone. This period can be shortened only if means are found for reducing the very high initial and maintenance costs of rotary wing aircraft: otherwise it will not be easy to defeat the vicious spirals and circles of economics which at present make progress difficult. If they are to fill the administrative requirements of the Army, they must be used instead of, and not in addition to, existing vehicles or installations, and this will not be possible unless a high rate of serviceability and reliability can be ensured.

Close Liaison Required

In the present period of financial stringency, an important contribution to the solution of the present impasse in the provision of helicopters for the Army seems to lie in close liaison between the fighting services, the civil operators, and the Ministry of Supply. If all potential users could be kept in touch with designers and scientists through a single co-ordinating authority, it might be that helicopter designs could be modified from the outset to meet at least in some degree both military and civil requirements.

It is believed that the Soviets achieve this co-ordination in the production of their civil aircraft, which also are suitable and available for military use in war. It should surely be possible for the relatively young and expanding helicopter industry to develop on similar lines, and because helicopters would then be produced in larger numbers, users would be able to obtain their aircraft more cheaply. At the same time, the fighting services would have a call on existing production lines for the inevitable expansion which would be required in the early stages of a war.

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The Editor

The Army of the French Union in Indochina

Translated and digested by the MILITARY REVIEW from an article in "La Revue Française" (France) January 1952.

TO THE uninitiated Frenchman landing in Indochina, his first contacts with the Army never fails to be rather surprising. This is no doubt because the Army of the French Union in Indochina is a unified force of heterogeneous elements and varying organizations.

Army Missions

The Army is a product of circumstances which is constantly modified and changed



Soldiers of the Army of the French Union manning a position in the Ananas Pass.

according to the successive situations that have developed, but a force that is particularly well adapted to the missions that it is called upon to perform. The Army of the French Union in Indochina has three missions, namely:

1. The pacification of Indochina by bringing the Vietminh into subjection.
2. The protection of Indochina against an eventual invasion.
3. The training of the armies of the associated states.

Instrument of Pacification

As an instrument of pacification, it is charged with the task of destroying the Vietminh forces, by fighting against guerrilla forces and terrorism. However, because of his particular evolution, the Vietminh has ceased to be a purely internal enemy. He controls, as a matter of fact, a part of Vietnam, where he has organized regular forces which are attempting to penetrate into our dispositions. Until the day when all of Indochina is controlled, to the mission of internal pacification will be added the mission of defense.

Protection Against Invasion

Internal pacification would be a relatively simple task, even for an army which has other missions to perform, if the menacing shadow of the Chinese hordes did not show itself on the frontier of Tonkin. As is well known, here they stand ready to fan out over the tempting and age-old prey which is represented by the rich plains of Tonkin and Cochinchina. They hope, thereby, to reimburse themselves for the material aid which they have provided the Vietminh.

Training for the Armies

Finally, to these two missions, which are more specifically of a military nature, is added a third which is the heaviest responsibility: that of preparing, materially and morally, the armies of the associated states.

In this task, the Army of the French Union furnishes these armies with a doc-



Army troops in Indochina are being battle trained in all phases of modern warfare, so that eventually they will be able to provide the cadres, troops, and doctrines for the armed forces of the associated states. Above, an amphibious unit making a landing in Along Bay. Below, troops attacking across a highway in the Hanoi-Haiphong region.



trine, with training, and with the necessary support to assist them in their growth and in their eventual baptism of fire. Moreover, the Army of the French Union, through the training in its mixed formations, serves as



Troops crossing a stream during an operation in the Hatian region of Cochin China.



Troops of a Moroccan cavalry unit; part of the Army of the French Union in Indochina.

the transitional element in providing trained combatants and technicians for the armies of the associated states.

Flexible Organization

The number and the complexity of the problems to be solved have led to an organization of extreme flexibility. This organization includes standard regular units, as well as supplementary formations, work-

ing side by side in the accomplishment of their various missions.

Regular Units

The regular units, in their organization and capabilities, are similar to the corresponding units of the French Army. They are the backbone of the colonial forces. To a large extent, these regular forces constitute attack units. Organized as well-equipped divisions or tactical groupments, they are trained in the techniques of modern warfare.

Supplementary Units

Alongside these regular formations are a large number of supplementary units, whose organization and physiognomy vary *ad infinitum*. Composed of natives recruited, as a rule, in the zone in which they operate, these units are generally provided with French cadres. These formations are used primarily to maintain security in pacified zones and as scouts and flank guards for the regular units. Lightly equipped and capable of movement anywhere, these units are used to infiltrate enemy positions, to cause confusion, and to bring back information and prisoners. Moreover, because these troops are well acquainted with the country and the inhabitants, they are used to explore and to mop up newly conquered territory.

Army Recruitment

Besides being different from the French Army in organization and origin, this Army is also different from the recruitment point of view. France, occupied with many burdens, particularly European, has not been able to assign more than limited forces to the Far East theater, and these have been mostly cadres. Therefore, this Army is composed of North Africans, Senegalese, Legionnaires, and persons from every corner of the globe. The associated states, who are chiefly interested in the outcome of the struggle, have contributed more than any other member of the French

Union to the recruitment of the Army of the French Union in Indochina. They have furnished the men for all the supplementary units and about a third of the regular mixed forces.

Reasons for Unity

After contemplating this mosaic formed by such differing elements coming from all regions of the globe, one is led to wonder how it was possible to achieve a unified army. Probably the main reason is that these men are all volunteers who have come to fight. The fact that they receive pay does not make them mercenaries, for it is the mysticism of action and risk that has attracted them to Indochina, and not the lure of compensation which is ridiculously small in comparison with the value of life.

Another reason for this unity is the fact that all the units of this Army have

been trained by French cadres, and, therefore, are accustomed to the same methods of command, are trained in the same combat methods, and have lived in the same French Army atmosphere.

A Combat-Tested Army

This Army's real, deep, and living unity has stood the test of fire, and in point of combat camaraderie surpasses considerably the allied armies at the time of World War II, which was without question.

Thus is being trained on the soil of Indochina, in the crucible of battle, the Army which tomorrow will provide the cadres, troops, and doctrines for the armed forces of the associated states—armed forces which will be strong enough to ensure, alone, the pacification and security of their territories.

NEXT MONTH

The next issue of the *MILITARY REVIEW* will feature the article "Close Support Air Control," by Lieutenant Colonel Clarence E. DeReus, an instructor at the Command and General Staff College. The author states that the critical test of the effectiveness of any supporting weapon is the control in placing the fire on the target. For this reason, he contends that the artilleryman, who works with the infantry, provides their artillery fires, and understands their needs, is better able to co-ordinate the air-support requirements of a ground unit than an Air Force representative.

"The Soviet Attack in Depth," from *Revista Militare* (Italy), will be included in the "Foreign Military Digests" section of the magazine. This article discusses the methods adopted by the Soviets in their attacks in depth during the second half of the last war, with particular emphasis on the organization of the attack, the value of surprise, time of attack, attack procedures, the need for mutual co-operation and effective liaison, and the supply problems encountered in such operations.

Air Reconnaissance—Its Purpose and Value

Digested by the MILITARY REVIEW from an article by Air Marshal Sir Thomas Elmhirst in the "Journal of the Royal United Service Institution" (Great Britain) February 1952.

WHEN a war begins, a curtain even more impenetrable than the Iron Curtain drops between the opposing countries. The Bible says "without vision the people perish." Although a country may not, in fact, perish because of its inability to see where the armed forces of its enemy are and what they are doing, its own armed forces will be severely handicapped and may suffer defeat through being brought to action out of position, unbalanced, or before they have been able to concentrate.

Military Information Essential

Throughout a war, and more especially at its beginning, the high commands of armies, navies, and air forces cry out for information about the enemy's fighting services. Where are they? In what strength are they? How are they organized and armed? What is happening at their bases and have they established a new base? What supply lines are they using? What and where are their reserves? What is their next likely move? Have they any surprise weapons, and where? What effect did our offensive operations yesterday have on the enemy? Our own dispositions, whether offensive or defensive, must be made according to the answers we can obtain to some or all of these questions.

Methods of Obtaining Information

There are various methods in war of obtaining this information, or intelligence, from the other side of the curtain; namely, from prisoners, from captured documents, from agents planted in enemy countries, from listening to the enemy talking on the air, from neutrals, and enemy newspapers. The best method is, of course, to be able to read the enemy high command's orders to his own forces, but this can seldom be done! At the end of World War II, un-

doubtedly pride of place in methods for obtaining information of our enemy's land, sea, and air forces, of his industry and of his lines of communication, went to reconnaissance carried out by aircraft.

A Severe Handicap

At the beginning of World War II, Britain's armed forces were severely handicapped because the Royal Air Force was not equipped with any aircraft capable of carrying out a satisfactory reconnaissance, either close over the enemy front line, or in depth over his naval bases, industrial centers, airfields, or lines of communication. The only squadrons (other than two or three flying boat squadrons) trained in the art of air reconnaissance were equipped with aircraft which were neither capable of fighting to obtain the desired information, nor of obtaining it by evasion because of their high speed, rate of climb, or range. These errors in the provisioning of a proper type and a properly equipped aircraft were remedied as quickly as possible, but I doubt if, even at the end of the war, all commanders in chief were satisfied that they had all the air reconnaissance that they required.

Wartime Examples

A few instances of vital information received from aircraft reconnaissances in the last war will, perhaps, show something of the purpose and value of well-trained and well-equipped air reconnaissance units, both in the strategic, or long range, and in the tactical, or short range, spheres.

As for our own air reconnaissance, the plotting, from air photographs in May and June 1941, of the moves of German Air Force squadrons away from the Channel coast to airfields in East Germany, Aus-

tria, and Poland foretold for certain that the German attack on the Soviet Union was about to begin. So again did photographs, in the early winter of 1944, of German Air Force units concentrating on airfields in West Germany behind the Rhine, foretell the coming of the Ardennes offensive. The great and successful allied bombing offensive on oil factories and rail communications in the spring of 1944, which preceded the liberation campaign, would have needed double the effort if a daily air photographic survey of Europe had not been available, from which bombing target maps could be made and from which could be seen what objectives had been destroyed and what needed further attention. The battleship *Bismarck*, on her last voyage, was located by air reconnaissance shortly after her arrival at Trondheim, and was again located by flying boat reconnaissance some hundreds of miles off Brest, after she had been lost to view for many hours. This sighting enabled her to be brought to action and destroyed by British naval forces.

In the tactical sphere, there were some days just prior to the El Alamein battle when the German Air Force was making it almost impossible for our *Hurricane* tactical reconnaissance aircraft to obtain for General Montgomery the detailed information he required of the enemy dispositions. One squadron had been decimated in attempting to gain this vital knowledge. However, the information was obtained by giving a lone, well-trained pilot-observer in his *Hurricane* an escort of a complete wing of three squadrons of *Spitfires* to escort him round his route over the enemy positions. As a matter of interest, it was Royal Air Force fighter pilots, returning from a sweep over the enemy back areas, who first reported signs of the enemy withdrawal at the conclusion of the battle.

It will, perhaps, be of value to record that had trained observers and a photographic library been available, the latter

from which reference could have been made to previous photographs, early news might have been had of the German move into Norway in the spring of 1940. A few days before the invasion, and for the first time, a Royal Air Force plane was available, capable of taking photographs of the German Baltic harbors and returning safely with the photographs. These showed two harbors packed with shipping, both naval and mercantile. As no previous photographs were available to which reference might be made, no conclusion was drawn from them. However, a few days later, further photographs were taken and the harbors were seen to be empty. On the night before the Norway invasion, a Royal Air Force night bomber crew, on return from a sortie over the Hamburg-Bremen area, reported having seen streams of cars with their headlights on going north toward Schleswig. Unfortunately, the report was not considered vital at the bomber's base and came too slowly through the usual channels to the Air Ministry, where the right conclusion might have been drawn.

Enemy Air Reconnaissance

On the enemy side, two instances readily came to mind, one of the value and one of the complete failure of his air reconnaissance in the last war. First, long-range reconnaissance aircraft located and reported the *Prince of Wales* and the *Renown* off the Malayan coast without an accompanying aircraft carrier. This one report enabled Japanese land based torpedo aircraft to send those two great ships to the bottom and thereby alter the entire course of the war in Southeast Asia. The other was the complete failure of the German air reconnaissance units either to locate the invasion fleets in their English ports in June 1944, or when at sea in the Channel on the way to Normandy on D minus 1. Surely this failure was one of the most astounding and costly failures of the war. The Royal Air Force Fighter Com-

mand was undoubtedly making air reconnaissance by the German Air Force a very dangerous and difficult job, but if ever a reconnaissance was worth fighting for and worth losing many aircraft to obtain, the one over the Channel on 5 June 1944 was.

Lessons to Remember

With these lessons in mind, and with the Royal Air Force's good reconnaissance schools and all their war experience to draw upon, there is no doubt that we shall be far better prepared for air reconnaissance tasks in the future than we were in 1939. However, the lessons of the last war are still worth remembering. Perhaps they may be summarized as follows:

1. None but the latest and best type of aircraft, whether single or twin engine (suitably modified), is of any real use for air reconnaissance, whether strategic or tactical, in the face of a competent hostile air force.

2. The best type of cameras both for high- and low-altitude work must be available. For strategic reconnaissance, photography from great heights is probably the producer of the best results. However,

there are many days in the year in Europe when clouds make photography from great heights impossible, and it may well be that on one of these days a report must be obtained, and can only be obtained, by a low-altitude flight and by the eye of an experienced pilot-observer, who is familiar with the objects which he has been sent out to report upon. For tactical air reconnaissance, the combination of the trained pilot-observer's eye and the camera is probably the best.

3. Men expert in the interpretation of photographs of every type of objective that may become the target of a bomber force, or of bombardment by shore or naval guns, must be available, together with a reference library of photographic prints.

The Germans, prior to World War II, had target maps of all suitable bombing objectives in Britain which had been taken from the air in 1938! It is not Britain's habit to undertake such flying operations over a possible theater of war before the outbreak of hostilities, but there are other ways by which target dossiers can be compiled in times of peace.

The Soviets have been building up their air defenses against our strategic bombing fleet. They have not neglected their other kinds of planes such as their long-range bombers and tactical light bombers, but the effort which has been the most in the news has been their build-up of their interceptor planes—the planes that would attempt to block our strategic atomic counterattack. Our strategic air arm, as you know, is the force which would carry atomic bombs to the heartland of an enemy that had attacked us, with the purpose of knocking out the basic striking power of the enemy's long-range air force and its industrial and other military power.

Secretary of the Air Force Thomas K. Finletter.

The Strategic Function of Southeast Europe in World War II

Translated and digested by the MILITARY REVIEW from an article by Gaetano La Rosa in "L'Universo" (Italy) January-February 1952.

IT HAPPENS, at times, that historical events fail to be accorded adequate appreciation by public opinion and reveal their true meaning with the passing of time and after critical examination. This is, to a certain extent, the case with the war that was fought in Southeast Europe. The diplomatic transactions recorded there, and the role played by the Danubian and Balkan countries, without question, exercised a decisive influence on the entire course of the war in Europe, but they did not always reveal their scope, their direct connection with the causes of the conflict, and their decisive weight in the conduct and outcome of operations. For many years, it had been the rule of historical narration to summarize the life and changing conditions of these regions solely in connection with their successive contacts with the civilizations of the peoples who poured from the West to the East. The different mentalities of the various peoples, their conflicting aspirations, and their antagonistic interests naturally made the Balkan Peninsula not only a bridge of ethnical, political, and economic changes, but also a field of unending battles. The history of these peoples has become fused and confused with that of the neighboring states. It will be seen that their part of the globe, attached to the continental mass along the Danube, situated at the junction point of Europe and Asia, and bathed by the extreme eastern reaches of the Mediterranean, has become the center of world policy. Various factors have contributed to the political education and the historical development of these peoples; the principal ones being the rebirth of nationalism, and the struggle for political equilibrium arising from the confusion of alliances and counteralliances.

To perceive and fix in one's mind the

fact that the Balkan states have maintained a subordinate position and a fictitious unity, it suffices to examine a few typical attitudes that have been assumed toward them by the major nations.

The great democracies, in order to secure the Southeast against the invasion of ambitious nations, not being able to exercise a direct mandate over them and not wishing to increase their armies, were of the opinion that they should establish, alongside the traditional Balkan Entente, a Little Entente which would join them in a pact of reciprocal aid and security. The Third Reich saw, in the Southeast, the promised land, and war in these regions was destined to free Germany from the embarrassments which the unsupportable stability and exigencies of the European order of things opposed to her free development. The Soviet Union dreamed, in its own way, of shaping the destinies of Southeast Europe and using it as a point of issue for an overflow into the West. For Germany, the Southeast represented the point of issue for an overflow into the Orient. To both Germany and the Soviet Union, it was an amorphous region without confines, devoid of the traditional guarantees of public justice, and open to intrigue and the initiative of the strongest.

The Starting Point of World War II

In such an order of ideas and facts, the Southeast, included in the German-Soviet nonaggression pact of 1939, became the starting point for a new world conflagration. In negotiating this pact, both Germany and the Soviet Union were bent upon making the instrument which was to continue, in the East, the policy of occupation and usurpation already inaugurated by Germany in the West. Un-

leashing World War II, they aimed at changing the European order, founded on the inviolability of treaties and on international equilibrium, for a more elastic order that would correspond with their desires and their ambitions. As a result of this policy, Hitler was able to enter the war in the West with his hands free and with the certainty of fighting on a single front. He also had a previous understanding of the advantages he would obtain from the partition of Poland and with the sureness of providing a concrete basis to the ethics of *Lebensraum*. Similarly, the Soviet Union was able to penetrate into the Balkan states, to occupy a large part of Finland, to partition Poland, to get back her old frontiers on the north, to abandon the doctrine of Geneva, to withdraw her support to the Balkan agreement, to take Bessarabia, Bucovina, and the Danubian Isles from Rumania, and to force a change in the international control of the Danube.

Inevitable divergencies in the domain of common interests and unbridled ambitions led first to division, then to the dissolving of the nonaggression pact and then war between the two imperialists. Perhaps history will be able to confirm the fact that World War II was, in the final analysis, the struggle of the Teutons and the Slavs for supremacy in Southeast Europe. These brief notes aim to make a modest contribution to this theory.

Geography of the Treaty of Versailles

The treaties of peace, the diplomatic agreements, and the new territorial adjustments following the defeat of the Central Powers and the victory of the allies in World War I destroyed old national unions, gave birth to new states, and changed frontiers; profoundly transforming the political map of Europe.

The greatest changes occurred in:

1. Germany, who had to cede more than 27,220 square miles of her territory and 6 million of her inhabitants. The region

north of Nieman, with the city of Memel in East Prussia, passed to Lithuania; the estuary of the Vistula, with the city of Danzig in East Prussia, was constituted a free city, and the remainder passed, in large part, to Poland; Posnan was nearly all absorbed by Poland; notable portions of upper and lower Silesia were ceded to Poland and Czechoslovakia; Alsace and Lorraine were returned to France; Eupen and Malmédy were assigned to Belgium, and northern Schleswig to Denmark; the Saar was declared independent; the left bank of the Rhine and the bridgeheads of Cologne, Coblenz, and Mainz on the right bank were zones of occupation by the victors for a period of 5 to 15 years; and the whole of the zone to the west of the Rhine and a 31-mile strip to the east were permanently demilitarized.

2. Russia, who was deprived of 161,442 square miles of territory and 27 million inhabitants. She lost Finland, Estonia, Lettonia, and Lithuania, while considerable portions of territory passed to Poland and Turkey; Rumania was given Bessarabia.

3. Bulgaria, who lost 4,363 square miles of territory and 400,000 inhabitants through cessions to Rumania and Yugoslavia.

4. Turkey, who ceded to Greece the territory on the right bank of the Maritza between Adrianople and Dede Agach, and to Italy the island of Castelrosso; who recognized the sovereignty of England in Cyprus and the independence of Egypt; and who renounced her mandate over Hedjaz, Negd, Asir, Yemen, Syria, Palestine, Transjordan, and Iraq.

5. The breaking up of the Austro-Hungarian Empire, which marked the birth of the new Austrian republic. The cessions made to Italy, Yugoslavia, Poland, and Rumania left Austria with scarcely 32,432 square miles and 6 million inhabitants. Hungary, by similar cessions, was left with 36,807 square miles of territory and 8 million inhabitants.

The greatest acquisitions were to the profit of Serbia, who gained 59,189 square miles and close to 8 million inhabitants; Rumania, who received 60,232 square miles and 9 million inhabitants; and Denmark, who acquired 1,544 square miles and 165,000 inhabitants.

This brief recapitulation of the results of the peace treaties is made to emphasize the fact that, with the fall of the Austro-Hungarian Empire, there had disappeared one of two great antagonists who had disputed the leadership in the troubled Balkan Peninsula. The other contender, Russia, had been eliminated by the revolution of 1917. Thus, the peoples of the Balkans were left to their own destiny; but with England and France standing behind them.

The consequent creation of minor states, without a corresponding economic foundation sufficient for an independent existence, was followed by effects of such far reaching results as to condition the entire political life of Europe up to the outbreak of World War II. The new, small states, which were always in fear of coming to blows with the more powerful states, obtained favors, support, and aid of every type, however, their destiny, because of their geographic positions and their political physiognomy, was fatally sealed from the very beginning by the weight of the larger adjoining states. Yugoslavia, alone, attained the power of government in the bosom of the Little Entente.

Varying Policies

The policy of England did not favor the fusion of the little states inasmuch as it aimed at stabilizing the equilibrium created by the treaties, and leaving open the way to conquests in case of quarrels. The policy of France, based on the debility of Germany and Russia, was aimed at preventing the formation of compact German power and, therefore, in contrast

with the line followed by Great Britain, sought to create a system of small states with unified political direction. The incoherent policy of both nations encouraged Hitler to attempt every sort of adventure.

Germany and the Soviet Union profited by the situation and the ephemeral appearance of European solidarity fed by the League of Nations. Germany reassumed the rank of a great power with exceptional military preparation and amazing military dynamism. The Soviet Union escaped from its isolation and resumed its ancient designs by means of advantageous positions and the benefits of immediate profits, guaranteeing the possibility of resorting to action at the opportune moment.

The Southeast in International Policy

During the period between 1918 and 1939, the constant objective of all ententes, coalitions, and initiatives was predominance in Southeast Europe: whether in the establishment of the Little Entente, in revising the regime of the Danube, in maintaining guard over the straits, or in protecting the Middle East; and in confirming the principle of the self-determination of nations, in the partitioning of Poland, in attacking the West, and in consolidating the conquests of Germany.

German Aggressiveness

In these actions, one sees the aggressiveness of the Germans, the inertia of the Soviets, the insipience of the West, the inefficiency of the League of Nations, and the illusion of a collective security and an indivisible peace. Thus, a German mass of 65 million individuals, planted in the heart of Europe, in an unproductive territory of uncertain boundaries, again raised up from its catastrophic condition, rearmed, and resumed freedom of action. Germany erected the Siegfried Line, again occupied the Rhineland, freed itself economically, proclaimed its right to equal juridical recognition of rights and duties

with the other nations, provoked the demographic struggle, agitated the matter of *Lebensraum*, seized again the territories under plebiscite, and annexed Austria. Moreover, Germany proclaimed to the world her firm intention of reuniting in the Reich, all the peoples of Teutonic race who had been scattered by the defeat of 1918, and dismembering Czechoslovakia in order to make it a predominantly German protectorate.

In spite of its vigorousness, this action was a sham. Germany was only misusing the principle of nationalities and the sickness of the minorities to develop a more decisive policy of revenge; and to remake, in her own way, the map of Europe under the sign of the "new order."

The project of the liberation of the oppressed minorities was to serve as an excuse for arbitrary annexations and the consolidation of the system of gradual destruction of national unions. The incorporation of Czechoslovakia was to separate the Soviet Union from Europe and deprive her of air bases; shut off, to the West, the economic resources of one of the most powerful of European industrial centers, make available 25 German divisions for the western campaign, and gain time and means for turning these forces to the east.

Soviet Plans

The Soviet Union, in the face of the complacency of the West and the powerlessness of the League of Nations, was led to conclude that the Western democracies had definitely renounced the idea of European solidarity. She temporarily abandoned the Southeast to Germany, and worked out secret plans to Germany's detriment. Fearful of finding herself in a precarious situation and of having to be the first to endure the German attack without being able to count on any solid friendship, the Soviet Union waited for a favorable occasion for allying herself with the enemy she feared. The Soviet

Union intensified her military preparations in the hope that, in time, the coveted ally of today and the certain enemy of tomorrow would weaken in its incursions.

German-Soviet Nonaggression Pact

Germany, on the other hand, in her irrevocable intention of attacking Europe, to cover her rear, to engage herself on a single front, and to secure for herself supplies for resisting the British blockade, sought and obtained the alliance with the Soviet Union. In this way, the gates of Europe, from the Gulf of Finland to the mouth of the Danube, were opened to the two countries who were considered the worst enemies of civilization. Thus, the German-Soviet nonaggression pact brought together two opposed ideologies and put Europe under the heel of 80 million Germans and under the threat of 180 million Russians.

The content of the pact was simple: a policy of loyalty in the respective zones of interest; a policy of partition in the zones of common interest; and a policy of alliance in all other cases. This was equivalent to having a free hand in the first case, to using discretion in the second, and acting with boldness in the rest.

Thus, Hitler plundered and burned all Europe, stopping only at England. He then turned to the East, where he should have operated in accordance with his alliance. Thus began the double-acting policy which consented to the easy elimination of the intermediate masses which were incapable of defending themselves and which fatefully brought together the frontiers of the two false friends. To absorb the small states was a great error, because the accumulation of forces of destruction took away every possibility of collaboration and stirred up every type of misunderstanding. As a result, when Germany revealed the fact that she desired to exercise exclusive domination in the Balkans, the two allies found them-

selves pitted against each other in the void created by the disappearance of the buffer states. To complete the measure, the Three Power Agreement was entered into by the turbulent and aggressive countries of Europe and the Far East.

A Policy of Encirclement

In spite of all German explanations and assurances, the Soviet Union saw in this pact the resurgence, in Europe and Asia, of a policy of encirclement. The Soviet Union wondered whether the pact meant a military alliance between the Germans, Italians, and Japanese, or whether it was a prelude to the partition, among the contracting parties, of the world which was to be newly organized at the end of the war. Above all, she was afraid that the pact included her omission from the plan of partition of the British Empire after its collapse, which at that time was considered very near. The most notable aspect of the pact was that Germany, in stirring up Japan against the rear of the United States, entertained the illusion of being able to dissuade the latter from entering the conflict in Europe.

Instead, the United States intervened with decisiveness.

The German Campaign in the Balkans

With Poland erased from the number of European nations, the West subjugated, Great Britain under a continuous threat of invasion, the Soviet Union friendly but wary, and supplies secure, Hitler, in the fall of 1940, planned to consolidate the positions gained and to develop intense political action in the Southeast and the Mediterranean in order to bring all the Danubian and Balkan countries into his orbit.

The Balkans seemed ripe for this evolution. The instrument necessary for carrying out this project was the Three Power Agreement.

The winter season was favorable to

the diplomatic proceedings. The idle armies were being reorganized and were already massing toward the Russian frontier; their movements well camouflaged and their plans of operation worked out. All that was needed was the word to advance. The planned action was to be almost entirely political, and this, in fact, was continued as long as the German troops remained on the Danube. However, scarcely was the tendency manifested of lining up the southern Slavs with the Danubian peoples than the equilibrium began to fail, involving the Soviet positions of interest. Then, between ill humor and poor understandings, political action revealed itself as inadequate for the objective, and gave place to military action in forms that will definitely continue to be counted as belonging to the art of war.

Rumania was the first, after Hungary, to come under the sound of arms in the German *Lebensraum*. Then followed, to increase the ranks of the German allies, Czechoslovakia and Bulgaria. From this moment on, military pressures were exercised with vigor.

Greece, the last southeastern bastion of the system, bound by staunch friendship to Great Britain, was also overcome by combined Italian and German action. Crete succumbed under the first grand style attack by parachute and airborne forces. German aviation, from its bases in Greece and the Aegean, kept Crete under blockade and imposed a grave toll on sea traffic. The action was characterized by such violence and decision as to cause England to believe that Germany had designs on Syria and Cyprus.

Then the simultaneous occupation of Greece and Yugoslavia proved clearly the German will to put an end to the mistakes and settle the situation in the Balkans.

Turkey, keystone to the chessboard of the Middle East, in the difficult role of a neutral country, repelled the British and the Soviet solicitations and, after

the Balkan storm had subsided, concluded a treaty of friendship with Germany.

The Middle East suddenly became aware of certain easy advantages and Iraq rebelled against England, cut vital communication routes, and bound English troops and means to putting down the rebellion. Hitler failed to see that, with little risk, he would have been able to achieve a great victory since, at that time, England was obliged to face similar engagements of forces on a large scale, among which was the action in Africa against Rommel.

Soviet Activity

The Soviet Union, frightened by the German successes in the Balkans and encouraged by the reverses of the Axis powers in North and East Africa, considered that the hour had come for awakening from her inaction and take an active part in the movement started by Hitler in the East. She was quite conscious of her complete preparation, of the influence her logistic aid had on the efficiency of the German armies, and of the wear that the years of war had produced on Hitler's armed forces.

Unsuspected by the Three Power Agreement, and not wishing to denounce the German-Soviet pact, she was determined to govern her own conduct with regard to the successive German attitudes. The Soviet Union did not intend, any longer, to remain a spectator of the broad political readjustment, and kept herself ready to intervene in the affairs of the East. Naturally, almost overnight, the relationship between Germany and the Soviet Union came to occupy the leading place in the world of policy, while their opposed ideologies increased the distance between the two powers.

In the course of events, the Southeast appeared as the rampart of the chessboard on which the storm was gathering and its strategic function as the pivotal

point between the East and West revealed itself in all its clearness.

Hitler's Major Decision

The simultaneous convergence of many political and military exigencies and the incomplete solution of two great problems, the jolt England came near receiving in the West and the Soviet's operations in the East, led Hitler to make the situation a matter of attention calling for a definite decision. With the firm conviction that Great Britain had been and still was the greatest enemy of Germany, and that the other nations were either friends or enemies, the question then was to decide whether he should move suddenly against Great Britain or fight the Soviet Union first.

He had the firm conviction that the economic reserves provided by the Soviet Union were indispensable to Germany. Whatever decision Hitler was to make and in whatever direction he was to go, it was necessary to ensure the continuity of these supplies, whether for feeding the new cycle of operations or meeting the minimum requirements of all the occupied countries. Germany, in fact, was not only the war center, but also the European logistical center.

The solution of the dilemma was made difficult by the fact that Great Britain was no longer alone, and that more than half of the world, especially America, had a friendly attitude toward Britain and of a hostile attitude toward Germany. The increased rigidity of attitude on the part of the neutral states was a sure indication.

Prelude to Invasion

After vacillations which threatened to compromise both solutions, Hitler moved suddenly against the Soviet Union with the aim of destroying her fighting capacity. His aim was to secure his rear, continue to obtain supplies from the East,

and then turn the German Army against Great Britain; thus fighting his enemies one at a time.

There concurred, in the supreme decision, numerous factors and, principally, the error of believing that this was the final phase of the struggle. Germany believed that Great Britain, at the announcement of the first great German victories in the East, would lay down her arms. Germany assumed that the Soviet Union could be conquered in a few months, and that in fighting the Soviets and bolshevism, the British would join with the German crusade. Hitler believed that if Germany and Great Britain had engaged in an all-out war, the extreme murderousness of the conflict would have caused both of them to succumb and thus the Bolsheviks would have held in their hands the fate of the universe. However, above all, there was the logistic problem of transport, from the east to the west, of the armies which were already concentrated along the Soviet frontier—a problem which would have required time and means and which would have given to Great Britain and the Soviet Union an opportunity to ally themselves.

The Invasion of the USSR

In May 1941, 87 German divisions were massed along the front from Rumania to the Baltic, while 25 others were deployed in the Balkans. On 7 June 1941, Germany, with 120 divisions, together with 6 Rumanian divisions and 26 divisions in reserve, and 2,700 planes, invaded the Soviet Union.

The war undertaken by Germany in the second world conflict was not the traditional war prepared by policy and diplomacy, directed by the supreme administrations, and conducted by the armies and countries under the command of staffs.

Rather, it was the war of an ambitious despot who, in patriotic exaltation and in the slowness of the reactions of the democracies, ignored everything and believed himself to be able, with impunity, to set aside history, geography, economy, sociology, and military art in all the manifestations of life and activity and of peace and war.

Hitler's ignorance of, and perhaps contempt for, the various factors which govern war in its preparation and in its conduct was able to triumph through surprise and lack of preparation of the other countries. Thus, he won brilliant victories in the north and west of Europe. However, scarcely had the democracies become aware of the danger, and they speeded up their preparations, and made ready their means and their men. The struggle then lost its one-sided character and all those factors which, at first, had been ignored and set aside came into operation and impressed a different course on events.

Summary

In turning eastward, therefore, Germany did not commit an error greater than the one she had committed in turning to the West. Although, in marching against the Soviet Union, Germany not only faced the risks of an operation which, in the final analysis, would be sure to end with the victory of one belligerent and the defeat of the other, but she falsely discounted the fact that such an operation would have an adverse effect against her.

The other countries of the world, after many years of lethargy, finally were determined to put a stop to Germany's audacious idea of world domination, and formed a united effort to accomplish this task.

BOOKS OF INTEREST TO THE MILITARY READER

SUBMARINE. By Commander Edward L. Beach, USN. 301 Pages. Henry Holt and Company, New York. \$3.50.

By CAPT JOHN D. ANDREW, USN

Submarine, while basically the story of two United States submarines named *Trigger* told by an officer who lived and fought in these ships, also gives a very personal version of many of the astounding stories which came out of the under-seas war against Japan. These stories are all told as one who either took part in the action or was personally acquainted with the officers and men who risked their lives in order that the island empire might be isolated. The frustrations of conscientious seamen using defective torpedoes against a ruthless enemy are objectively described. Many of the details of these stories were not known until the survivors had been released from Japanese prison camps.

Of particular interest today are the stories of the duels between submarines, such as that of the *Batfish* which three times in 4 days stalked other subs and sent each of them to the bottom. The "killer sub" tactics on which we are now building a new concept of antisubmarine warfare were developed under fire by officers whose names are now engraved on the submarine honor rolls.

This book has much to offer both the casual reader looking for a thrill and the serious student of naval warfare expanding his understanding of war under the sea. Commander Beach combines personal experience and the dramatic style of a true spinner of sea tales.

VISA TO MOSCOW. By Michel Gordey. 419 Pages. Alfred A. Knopf, Inc., New York. \$4.50.

By 1ST LT RICHARD G. BASTAR, JR., *Armor*

Visa to Moscow is a vivid narrative of a 63-day visit to Moscow and surrounding cities by Michel Gordey, roving reporter for *France Soir*. It describes the difficulty, red tape, and formalities that he surmounted to get a "down to earth" picture of a country which for the past few years has cloaked its activities behind an "iron curtain."

Mr. Gordey went to Moscow with the idea of finding the answers to the following questions: Were the people of the Soviet Union happy or unhappy, free men or slaves? How did they live? Did they want peace or war? What did they know of the outside world? These questions and the results of his study and observations form the basis for this interesting book.

The author's travels, carrying us on trains and subways, through the streets, and into the factories and other buildings of such cities as Moscow, Leningrad, and Stalingrad, provide the information necessary to answer these questions and give us a better understanding of the Russian people.

This book is light reading, but it is enjoyable and will point out many surprising aspects of life in Soviet Russia and clear up many of our mistaken ideas about the USSR. I do not entirely agree with all of the author's conclusions, but I feel that the book is well worth reading for a description of the average Russian's living conditions, habits, and thoughts.

THE SIBERIAN FIASCO. By Clarence Manning. 203 Pages. Library Publishers, New York. \$3.75.

By COL GEORGE C. REINHARDT, *CE*

The United States' military expedition into Siberia, starting in July 1918 and terminating in April 1920, comprises one of the little-known chapters in our history. Professor Manning describes the events which induced President Wilson to order American troops into a friendly nation, torn by revolution; recounts the chaotic conditions in Eastern Asia which existed while General Graves' less than 10,000-man force, which possessed no weapons heavier than machine guns, was on foreign soil; and offers many reasons why the attempt "to give such aid as shall be acceptable to the Russian people in their endeavor to regain control of their own affairs, their own territory, and their own destiny" was fruitless.

The expedition's only directive, which included the foregoing quotation, was an "aide memoire" ascribed personally to the President. The expedition's commander received no information from the State Department and none, save the "memoire" handed him by the Secretary of War, from his own superiors. He sailed without knowledge of existing reports from American attaches or diplomatic representatives in Russia or even any official advice on the situation he would encounter in Siberia. According to his lone document of instructions, General Graves was "not to interfere in Russian affairs." Logically, he could do nothing "to aid in preparing their own (Russian) defense" until there was a Russian government recognized by his own. Such a government he never discovered. Nor was he informed by the State Department, which the author asserts was at loggerheads with the War Department over the interpretation of the President's directive, that representatives of the State Department had been ordered not to deal with the Bolsheviks.

To the General goes most of the credit that the expedition did not end in disaster. From the inadequate guidance available, General Graves sized up his mission as protecting Russian military stores "which may subsequently be needed by Russian forces" and guarding, to the slight extent feasible considering the size and armament of his troops, the railroad over which the Czech contingents were making their way slowly to Vladivostok. He had, of necessity, to deal with Bolshevik factions, which American diplomatic officers on the scene refused to meet, with half a dozen disunited White contingents, with a Japanese expeditionary force nearly 10 times his own, as well as French, British, and Czech armies.

All the misfortunes inherent in a great nation's attempt to pursue an idealistic but vague and unco-ordinated policy without adequate understanding of the practical aspects of the situation are portrayed in miniature. The author's explanation of results, both contemporary and for the future (which is today's present), are less clear however.

Siberian Fiasco is a short lesson in how not to conduct international affairs. Regrettably, it is devoid of constructive advice.

AMERICAN GOVERNMENT. By Rollin B. Posey. 312 Pages. Littlefield Adams & Co., Ames, Iowa. \$1.50.

By MAJ GREY DRESSER, *Armor*

Professor Posey presents a concise, up-to-date review of the governmental process in the United States on the national, state, and local levels. While the volume is intended primarily as an outline or review to the college student of this subject, it is also of general reader interest for it provides an excellent survey in fewer pages than the usual textbook would present of the facts, principles, doctrines, and ideas of government in our Nation.

COMMUNISM IN WESTERN EUROPE.

By Mario Einaudi, Jean-Marie Domenach, and Aldo Garosci. 239 Pages. Cornell University Press, Ithaca, New York. \$2.25 paper. \$3.00 cloth.

By CAPT SELWYN P. ROGERS, *Armor*

This volume is the initial result of studies at Cornell University concerning the root of difficulties in France and Italy today—communism. It deals extensively with this movement in these two countries.

The book has three parts, each by a different author. The first analyzes the general nature of Western European communism; the second gives a study of the French Communist Party; and the third describes the Italian Communist movement.

Some of the conclusions are as follows: Communism has filled the vacuum left by facism and war. French and Italian dissatisfaction with the Third Force and Christian-Democratic governments has aided the Reds; the sliding of anticommunism toward the right of necessity bringing about an increase of sympathy for communism. Western European communism cannot be considered wholly as a police problem, but remains a long-range political problem. The Communist Parties in both Italy and France are strong political forces; and even though it is quite clear now that they are tied to Moscow, they have strong appeal for many "true" Frenchmen and Italians. These conclusions and others are reasoned out at length.

One of the authors writes ". . . We are confronted with the unique issue of mass communism within societies that are fighting back politically and institutionally. What lends particular importance to the conflict is that it is waged inside two countries that have for long been at the center of the culture communism is trying to supersede and in the heart of a continent occupying a key position between the United States and the Soviet Union." For this reason the contents of this book contain much of interest.

MAO'S CHINA: Party Reform Documents, 1942-44. Translation and Introduction by Boyd Compton. 278 Pages. University of Washington Press, Seattle. \$4.50.

By CAPT WILLIAM H. BEAUCHAMP, *CE*

The chief value of this volume lies in its revelation of the basic thinking of the leaders of the Chinese Communist Party concerning the development of that Party and its members. Some notion of the problem of organization and considerable information concerning the ideology of the Party is clearly brought out in this excellent, easy-reading translation by Mr. Compton.

The book presents 20 documents in all which were the basis of an internal reform movement in the Party begun in 1942 by Mao himself. Mr. Compton prefaces these documents with an introductory background to help the reader understand this movement. The documents themselves consist of speeches, magazine articles, and editorials, all of which attempt to restore orthodoxy and sincerity in Communist thinking among the rank and file of the Party.

Certainly this book establishes the basic Marxist character of the Chinese Communists and should prove interesting to anyone desiring to learn how orthodox Mao's immediate followers are and what their chief problems are in putting across their own orthodoxy to the rank and file of the Party.

THE AGE OF DANGER. Edited by Harold F. Harding. 561 Pages. Random House, New York. \$2.45.

By IVAN J. BIRNER, *Ph.D.*

This volume is a collection of 68 speeches that were delivered during 1946-52, *the age of danger*. Selected primarily on the basis of timeliness and content, the speeches are models of good communication. While not particularly compiled for the professional soldier, the speeches included deal with many significant military problems.